PURCHASING

THE NATIONAL MAGAZINE FOR PURCHASING AGENTS

WAR BONDS—THE BEST BUY FOR 1943

★ ★ A CONOVER-MAST PUBLICATION • 205 EAST 42ND STREET, NEW YORK ★ ★ ★

R v.15 Jy-D 1943

PRODUCTION Sky-High!

HIGH up on the tail section of this big Navy PBM bomber, inspectors are checking the de-icing equipment of one of the vertical rudders. Bombers like these are rolling off the assembly lines in unprecedented numbers.

Increasing the output not only of planes but of tanks, ships, guns and ammunition is industry's most pressing problem . . . and Management in many lines is finding a ready solution through the use of Texaco Engineering Service and Texaco Products.

So effective is this combination proving that it is definitely preferred in many important fields, a few of which are listed in the panel.

A Texaco Engineer will gladly cooperate in the selection of the most suitable Texaco lubricants to increase the output of your plants. Phone or write the nearest of more than 2300 distributing points in the 48 States or write to:

The Texas Company, 135 East 42nd Street, New York, N. Y.

THEY PREFER TEXACO

★ More buses, more bus lines and more bus-miles are lubricated and fueled with Texaco than with any other brand.

★ More stationary Diesel horsepower in the U. S. is lubricated with Texaco than with any other brand.

★ More Diesel horsepower on streamlined trains in the U. S. is lubricated with Texaco than with all other brands combined.

★ More locomotives and railroad cars in the U. S. are lubricated with Texaco than with any other brand.

★ More revenue airline miles in the U. S. are flown with Texaco than with any other brand.

TEXACO

TEXACO Lubricants, Fuels and Engineering Service

TUNE IN THE TEXACO STAR THEATRE EVERY SUNDAY NIGHT – CBS ★ HELP WIN THE WAR BY RETURNING EMPTY DRUMS PROMPTLY

Tech

Take a Look at TOMORROW—*Today!*

Mr. Now: Dried out, *soaked, and baked,* eh! So that's why Century Motors stand up!
Mr. Postwar: I'll remember that — it's another reason why I shall specify *Century* Motors.

Century Form J Motor

The Protection of
CENTURY INSULATION
Assures Continuous Motor Performance Under the Toughest Conditions

By the use of slow-moving conveyors and automatically-controlled ovens, the completed stator and winding of Century Motors is dehydrated, and then is submerged in and passes through a tank filled with Century "Clingto" insulating varnish, and then baked. This process is repeated as necessary to preserve and seal the winding into a homogeneous mass.

This is followed by a final coat of Century "Protecto" insulation compound which places a heavy exterior protecting armor over the entire winding.

Century slot insulation is built up with fibre board for mechanical strength and varnished cloth for dielectric strength.

The entire Century insulation process produces a winding that is highly resistant to moisture, to tropical climatic conditions, to mild acid and alkali fumes, and to the effect of magnetic vibration and the mechanical impact of particles carried by the cooling air.

Such insulation material and treatment is absolutely necessary for motor protection for long operating life.

Your nearest Century Application and Service engineer will gladly give you full details of all the advantages of Century Motors—show you why thousands of plants rely on Century for continuous, all-out production.

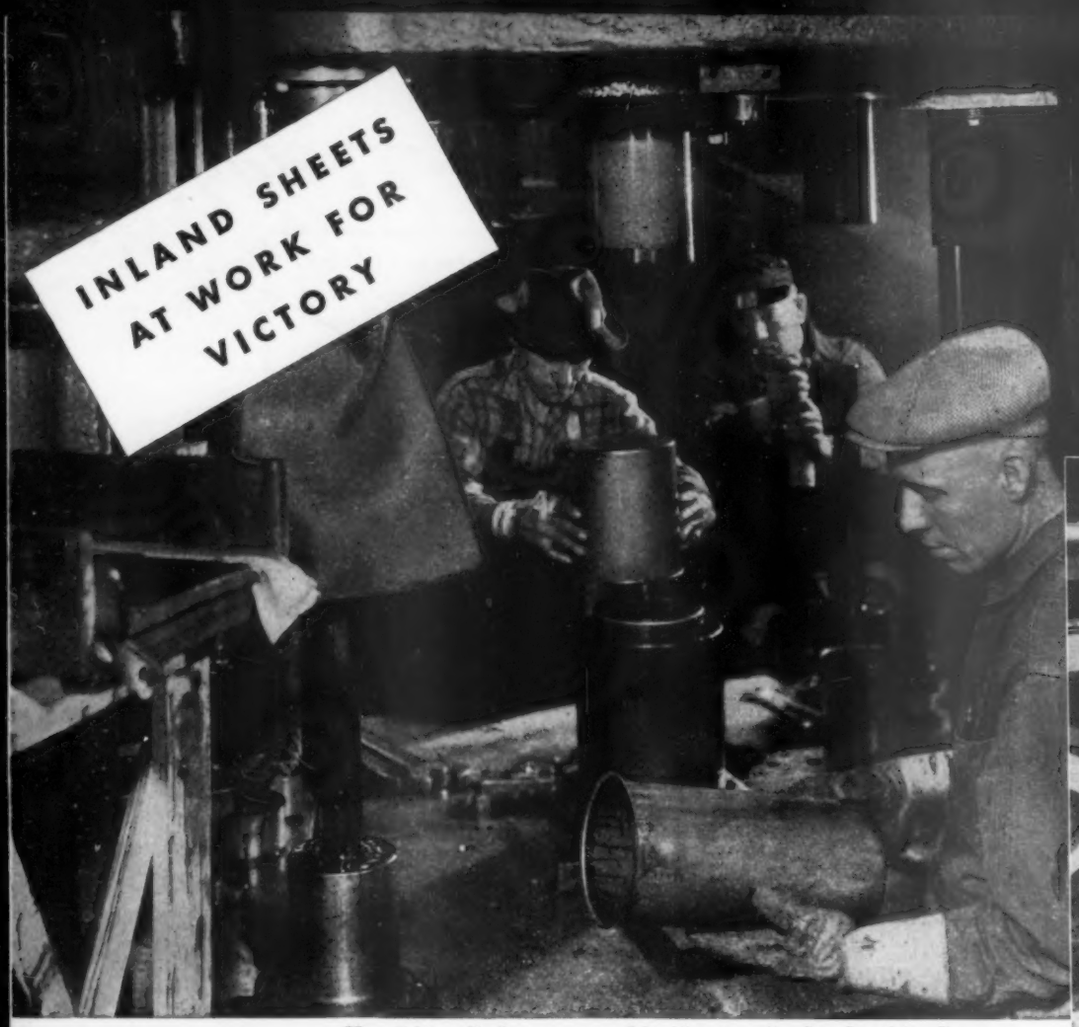
Century MOTORS
1/6 to 600 horsepower

CENTURY ELECTRIC CO.
1806 Pine Street
St. Louis, Missouri
Offices and Stock Points in Principal Cities

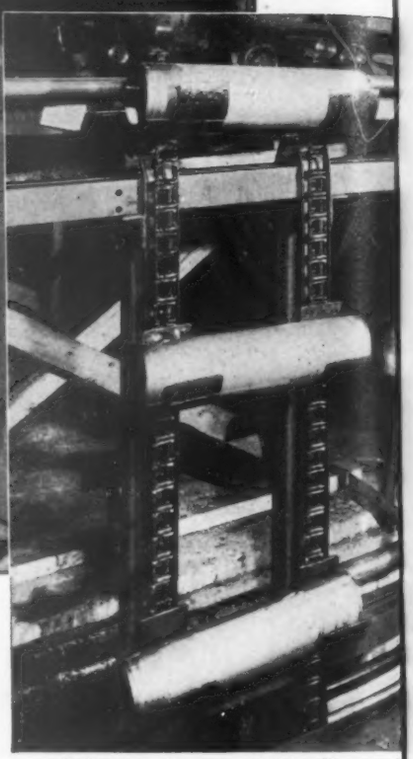
307

One of the Largest EXCLUSIVE Motor and Generator Manufacturers in the World.

PURCHASING, published monthly by Conover-Mast Company, Publication Office, Orange, Conn. Editorial and Executive Offices, 205 East 42nd St., New York, N. Y. Entered as second-class matter August 8, 1942, at the Post Office in Orange, Conn., under the act of March 3, 1879. Subscription, $3.00 a year in the U. S. A. Canada and Foreign $400. Volume XV, No. 1



Here 7-in. cylinders are turned inside out and reduced to 6 in. diameter.



Cylinders, drawn to 4½-in. diameter b
in. deep through a ring die, are con
from the press pit to the finishing f

4½" x 17" Steel Cylinders– *Drawn from Inland Sheets*

Only four operations are necessary to form a 4½-in. diameter by 17 in. deep cylinder that is part of a shell container used by the U. S. Navy.

In the first operation an 18-in., 19-gage, blank, cut from Inland deep drawing sheets, is formed into a cylinder 10 in. in diameter by 6 in. deep. The second operation reduces the diameter to 7 in. and increases the depth to 8⅞ in. In the third operation a 7-in. by 8⅞-in. cylinder is placed bottom end up over the lower die. The upper die, pressing against the bottom of the 7-in. cylinder, forces it into the lower die, turning the cylinder inside out while reducing the diameter to 6 in. and increasing the length to 12⅝ in. In the final operation a 6-in. cylinder is placed over the upper die which forces it through a ring die, drawing the cylinder to final size, 4½ in. in diameter by 17 in. deep.

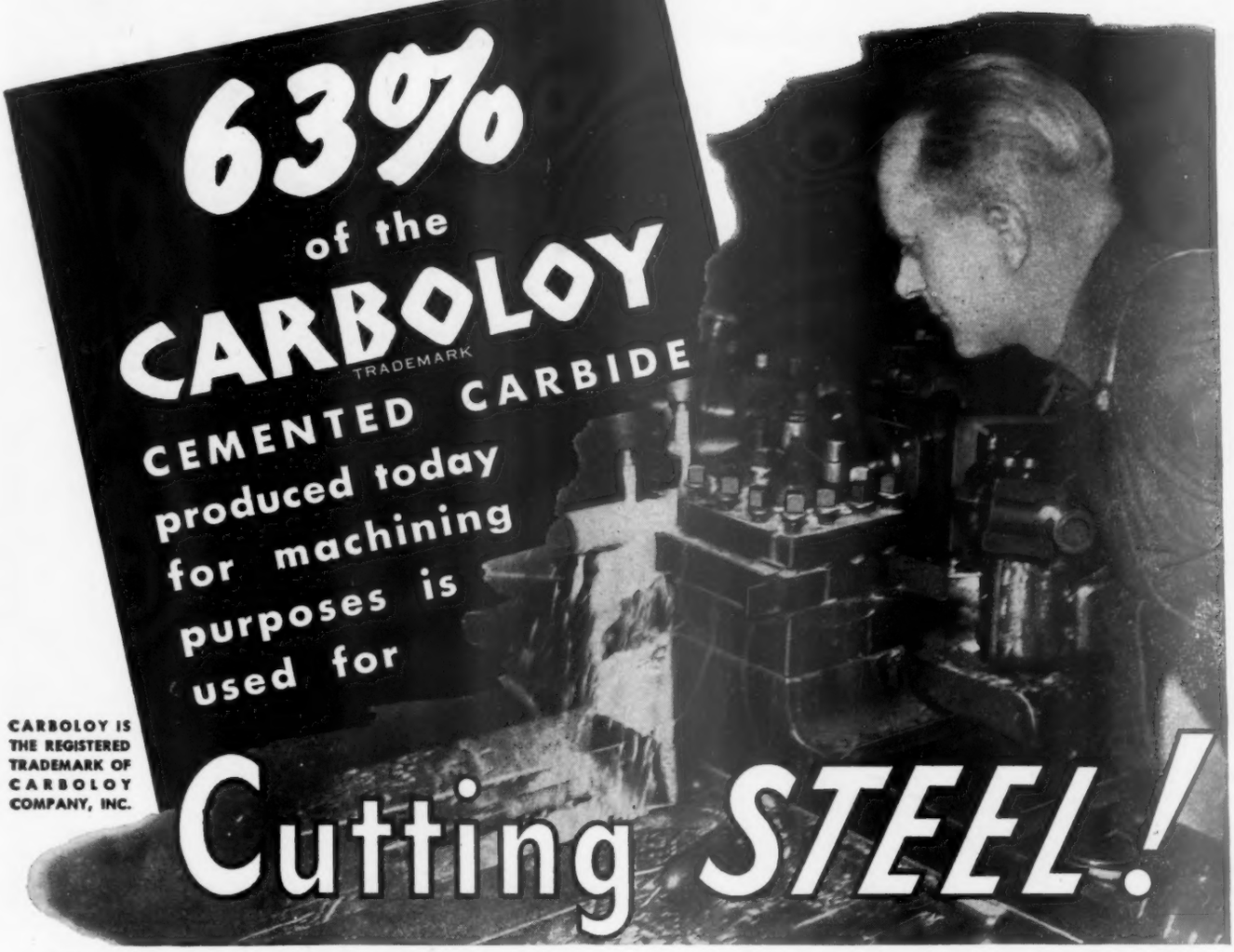
These cylinder forming operations, like many other difficult war jobs, are proof of the uniformity and high quality of Inland flat rolled steel products—products that are being used 100% for Victory.

ARMY E NAVY

INLAND STEEL CO.

38 S. Dearborn Street, Chicago · Sales Offices: Milwaukee, Detroit, St. Paul, St. Louis, Kansas City, Cincinnati, New York

63% of the CARBOLOY TRADEMARK CEMENTED CARBIDE produced today for machining purposes is used for Cutting STEEL!



CARBOLOY IS THE REGISTERED TRADEMARK OF CARBOLOY COMPANY, INC.

"Ploughing" through tough cast armor plate at cuts up to 1 in. deep—drilling gun barrels—cutting off shell—taking interrupted cuts through sand holes and scale—producing a quality of finish on critical parts often impossible to obtain with former tools—holding close tolerances that drastically reduce and often entirely eliminate subsequent grinding—making steels of 400 to 500 Brinell machineable—these are typical of the present day uses of Carboloy cemented carbide tools for cutting steel.

Today 63% of all Carboloy cemented carbides produced by Carboloy Company for machining applications are steel cutting grades. You'll find them in practically every major war plant throughout the nation, turning out steel parts for war at speeds 4 to 5 times faster than former tool materials, staying sharp up to 10 times longer—increasing production often as much as 300% on the thousands of applications upon which victory depends.

Write today for catalog GT-142 listing Carboloy cemented carbide grades for cutting steel, cast iron and non-ferrous metals available in more than 300 standard Carboloy tools and blanks.

Are You Using The Right Chip Breaker?

A special film available on design and grinding of chip breakers for carbide tools. One of a series of six films on Design, Brazing, Application and Grinding of carbide tools for use in your training program. Write for folder GT-151.

CARBOLOY COMPANY, INC., 11191 E. 8 MILE ROAD, DETROIT, MICHIGAN

Sole makers of the Carboloy brand of cemented carbides

Birmingham, Ala. • Chicago • Cleveland • Los Angeles • Newark • Philadelphia • Pittsburgh • Seattle

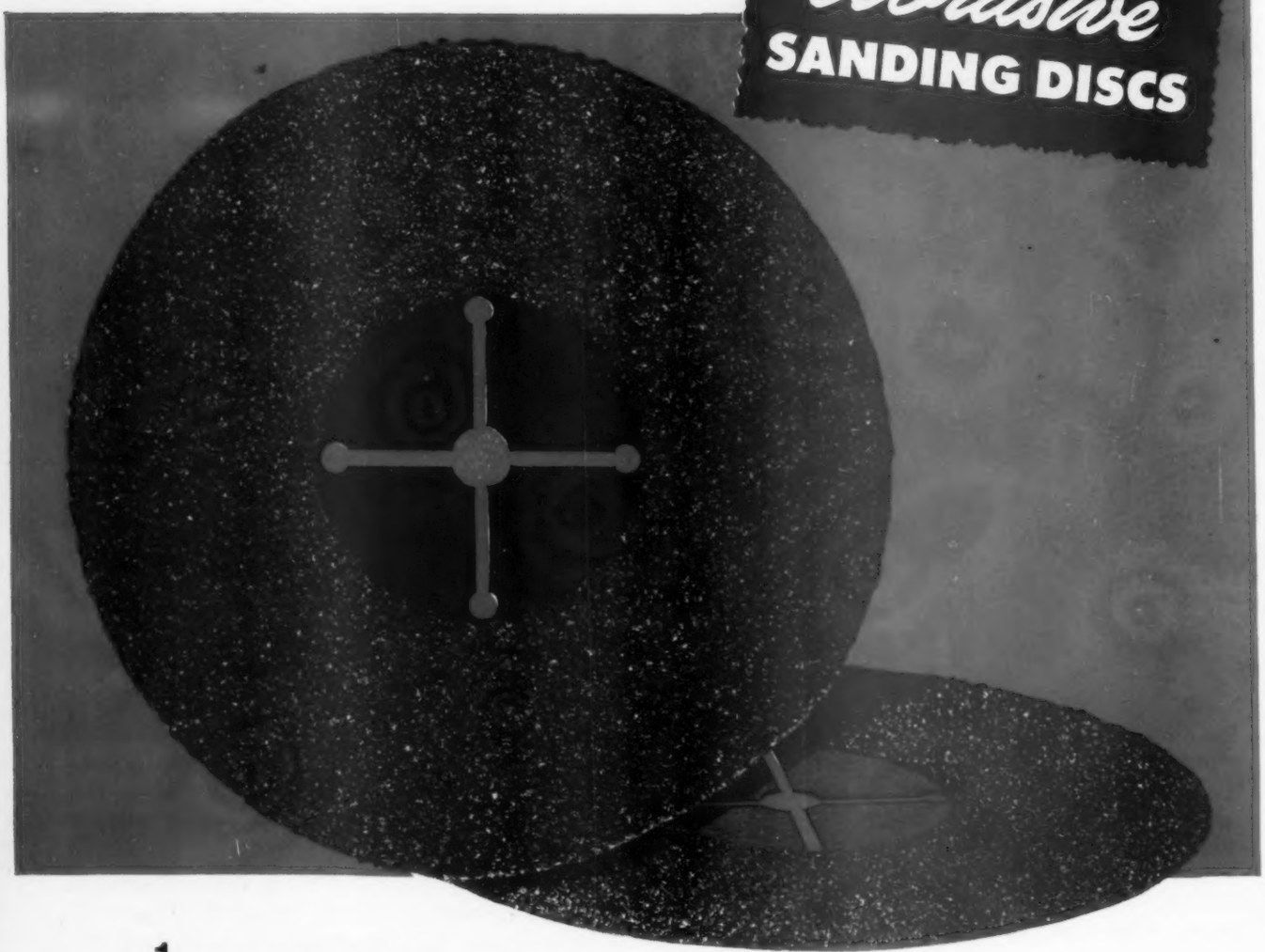
Canadian Distributor: Canadian General Electric Co., Ltd., Toronto, Canada. *Foreign Distributor:* International General Electric Co., Schenectady, N. Y.

CARBOLOY TRADEMARK

TITANIUM CARBIDES
TANTALUM CARBIDES
TUNGSTEN CARBIDES

you get Speed and Efficiency with

MARVEL *Abrasive* SANDING DISCS



1 Marvel Discs are resin bonded.

2 A resin bond will not soften under frictional heat and Marvel Discs naturally will not load when the bond does not soften and flow.

3 It has been proved Marvel Discs will give longer service than a glue bonded disc.

4 Let us prove our statements by furnishing you with a free sample to try under your own working conditions.

FAST CUTTING
LONG LASTING
COOL RUNNING
NON-CLOGGING
SAFETY IN USE

A FEW TERRITORIES STILL OPEN FOR REPRESENTATION BY AGGRESSIVE AGENTS

MARVEL *Abrasive* SANDING DISCS

MANUFACTURED BY

Fibre Abrasive Corporation

1129 EAST 74TH STREET · CHICAGO, ILLINOIS

If "Burring"

IS YOUR PRODUCTION ENEMY No. 1—

Let Osborn Prove To You How Brushes Can Speed and Improve This Operation

● The illustrations above show a section of a precision metal part used in a vital wartime product. Top photograph is a close-up view of one edge of this part. What looks like a mountain range around the hole are really small burrs. Below it this same area is pictured after brushing. Note the absence of any excess metal, the smooth finish and the rounded corners.

This example is typical of thousands of metal parts, large and small, going into the production of such precision products as bombs, shells, guns, recoil mechanisms and motors. Every one must be free of burrs. Every one must have the corners broken. Too frequently, both operations are being performed by slow, inefficient manual methods, with the result that an abnormal number of workers is required for this service and the finished job leaves much to be desired.

Osborn representatives are prepared to study your burring requirements and show you how the right type or types of power-driven brushes, properly applied, can speed, simplify and improve this all-important operation. Write today for complete information. *The Osborn Manufacturing Company, 5401 Hamilton Avenue, Cleveland, Ohio.*

Osborn Brushes

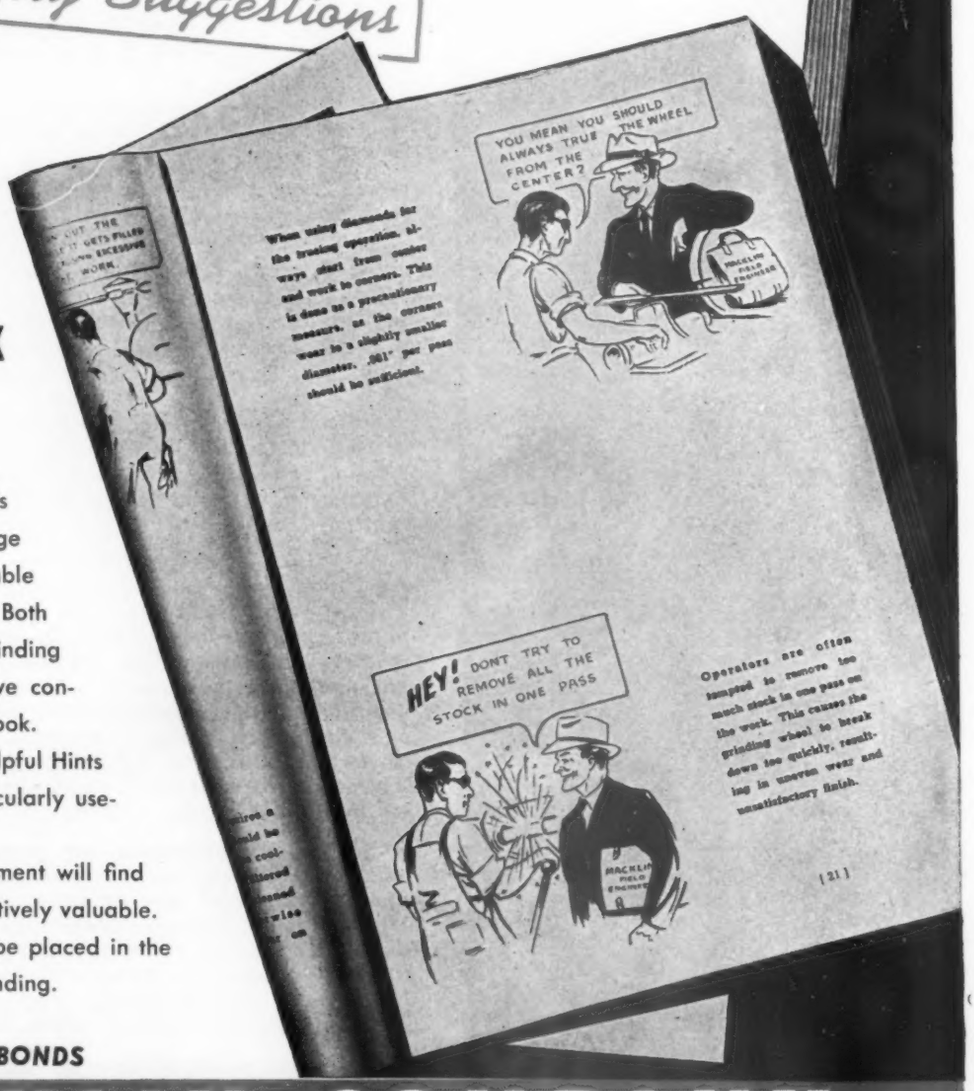
WORLD'S LARGEST MANUFACTURER OF BRUSHES FOR INDUSTRY

MACKLIN GRINDING WHEELS

HELPFUL HINTS

and

Safety Suggestions


YOU MEAN YOU SHOULD ALWAYS TRUE FROM THE CENTER?
When using diamonds for the truing operation, always start from center and work to corners. This is done as a precautionary measure, as the corners wear to a slightly smaller diameter. .001" per pass should be sufficient.
HEY! DONT TRY TO REMOVE ALL THE STOCK IN ONE PASS
Operators are often tempted to remove too much stock in one pass on the work. This causes the grinding wheel to break down too quickly, resulting in uneven wear and unsatisfactory finish.
[21]

FREE INSTRUCTIVE BOOK STILL AVAILABLE

Now in its third printing this Know How illustrated 64 page booklet has proved an invaluable aid to grinding departments. Both large and small users of grinding wheels welcome the informative contents of this comprehensive book.

New grinder hands find "Helpful Hints and Safety Suggestions" particularly useful.

Your entire grinding department will find its many concise facts constructively valuable.

Ask for sufficient copies to be placed in the hands of all interested in grinding.

★

INVEST IN WAR BONDS

MACKLIN COMPANY

Manufacturers of **GRINDING WHEELS — JACKSON, MICHIGAN, U. S. A.**

Distributors in all principal cities

Sales Offices: — Chicago - New York - Detroit - Pittsburgh - Cleveland - Cincinnati - Milwaukee - Philadelphia

18 War Production Men report what happened *when lighting was improved**

GREATER ACCURACY

SHELL FUSE manufacturer: Production increases of from 25 to 50 per cent as result of better inspection and more efficient machine operation.

MOTOR TRUCK manufacturer: Workmen read micrometers and scales more accurately.

TEXTILE manufacturer: Better Lighting a great aid in color matching.

LESS SPOILAGE

ROLLER BEARING manufacturer: Grinder operators spot improper grinder performance more quickly and can correct it before work is spoiled.

ELECTRICAL EQUIPMENT manufacturer: Better lighting accompanied by five per cent reduction in errors.

FACTORY OFFICE: Reduction in office errors as result of lighting.

FASTER SEEING

HEAVY MACHINE TOOL BUILDER: Better lighting reduces time required to rebuild a machine.

ELECTRICAL EQUIPMENT manufacturer: Time required for machine set-ups reduced.

AIRCRAFT PARTS manufacturer: Less time lost by workmen hunting for tools.

EASIER SEEING

LAMP manufacturer: Time for training new women operators greatly reduced.

SMALL MACHINE PARTS: Men can read scales and blueprints more easily at night than by daylight.

FACTORY OFFICE staff: Unable to keep up with increased work under old lighting, but now work is done without undue effort.

INCREASED SAFETY

ORDNANCE PLANT: Increased safety, especially when breaking in new labor.

SHIP BUILDER: New lighting reduced blinding effect of flashes from welding torches.

TEXTILE manufacturer: Decreased fire-hazard.

DECREASED FATIGUE

MACHINE PARTS manufacturer: Men on night shift gained weight.

AIRPLANE PARTS manufacturer: Morale improved; fewer yard fights.

AIRPLANE PARTS manufacturer: Fewer headaches; aspirin tablet consumption decreased from 1000 to 600 tablets per month.

War Production Executives!

The 18 comments summarized on this page are typical of the wide range of benefits resulting from lighting improvements.

Lighting may seem like the least of your problems. But it may be the answer to some of your *other* problems. We'd like to take the lighting problem off your shoulders, by sending a Wartime Lighting Counselor to check the seeing conditions in your plant and get the most out of *present* lighting equipment.

Call your nearest G-E lamp office. Or see your G-E lamp supplier or your electric service company. General Electric, Nela Park, Cleveland, Ohio.

***** *These reports are the result of a survey of war plants made under the direction of a special committee of the Illuminating Engineering Society, a non-profit professional organization of the nation's leading lighting authorities. Interviews were made by teachers of illuminating engineering of five leading technical colleges.*

G-E MAZDA LAMPS

GENERAL ELECTRIC

Tune in the G-E MAZDA lamp radio program Sunday at 10 p.m. (Eastern War Time) N.B.C.

GET THIS "Know-How" Information FOR YOUR PLANT

USE COUPON BELOW

☐ **1. AUTOMATIC CONTROLS** — Quick check charts detail essential maintenance steps for each major type of automatic temperature control. Copies for the asking —indicate different types of instruments used. Foxboro Co.

☐ **2. FILES & FILING** — File Filosophy is 48 page booklet illustrating files and filing and covers notable differences in design and results between regular files and special purpose files for various metals, foundry and die castings, shear tooth and lathe filing. Nicholson File Co.

☐ **3. LUSTRELESS ENAMELS** for all types of bombs and other ammunition components. Copy of U. S. Government Specification Book, 1943 edition, for the asking. Egyptian Lacquer Mfg. Co.

☐ **4. SPRINGS** — "Science in Springs" is name of booklet giving curves, charts and formulae for developing essential springs for war equipment and other uses. Hunter Pressed Steel Co.

☐ **5. BOLTS, NUTS, SCREWS, RIVETS**— Simplified stock sizes as scheduled in MPR No. 147. This is title of booklet giving details conforming to latest revisions of OPA, and which shows in what ratio quantities of various standard products are kept in stock for deliveries by jobbers and in manufacturers' warehouse stocks. Lamson & Sessions.

☐ **6. VALVES, FITTINGS, PIPE and Pipe Wrenches.** New catalog available. Gives information on Silbraz Joint which is said to be vibration proof, corrosion resistant and leakproof. Walworth Co.

☐ **7. CHAINS** — Herc-Alloy Steel chain fabricated from special analysis heat treated alloy steel, which it is said will bridge square corners without gouging or kinking, is covered by descriptive catalog. Columbus-McKinnon Chain Corp.

☐ **8. STEEL GRATING**—Sample for paperweight, and catalog for the asking. Grating provides safety footing, is self-cleaning and easy to maintain—electroforged into one solid piece. Blaw-Knox Divn. of Blaw-Knox Co.

☐ **9. SURFACE GRINDER**—New low cost tool and other machine tools are described in new catalog, the line including drill presses, band saws, abrasive finishing machines, etc. The Delta Mfg. Co.

☐ **10. WOOD OFFICE FILES** to match existing equipment—Twenty-page catalog describes Guardsman line which includes letter and legal size units in 2, 3, 4 and 5 drawer heights, tabulating card sizes, etc. Remington Rand Inc.

☐ **11. THIN PAPERS** to reduce office and factory expense—Onion skin, manifold and clear copy onion skin; recommended for thin letterheads, copies, records, branch office and foreign correspondence. SAMPLES for the asking. Esleeck Mfg. Co.

☐ **12. COVER STOCK PAPERS** for booklets, manuals, catalogs, etc. Samples for the asking, of rugged, serviceable stock that will stand up under hard handling, and which can be stitched, sewed, eyeletted or stapled, and which accepts any form of press work including halftones. Available in wide range of colors. Holyoke Card & Paper Co.

☐ **13. RECIPE FOR ORDERLY DESK**—Book by William Feather, business writer and editor, shows simple practical ways of organizing the day's work, and how to eliminate time-wasting interruptions. Copy is Free. Hammermill Paper Co.

☐ **14. ABSENTEEISM** — Presentation on Absenteeism and "What's the Answer?" Contains facts on how to eliminate useless forms, cut red tape, and speed production. Describes system that provides complete records, easily tabulated for analysis and action. The Standard Register Co.

☐ **15. CMP—VISIBLE CONTROL**—Production, Inventory, Purchase, Personnel. Literature describing these subjects and "World's Fastest Visible Record Keeping System", available for the asking. Visible Indes Corp.

☐ **16. PAPER TOWELS**—Texturized towels are said to have unusually good absorbency, to have extra strength, and freedom from lint. Samples for the asking. Straubel Paper Co.

☐ **17. RECHARGEABLE FLASHLIGHT Storage Batteries**—Can be recharged over and over again. Provide bright, steady light at all times. Same size as two 1¼" D dry cells. Fit standard flashlight case. Described in special bulletin. Ideal Commutator Dresser Co.

☐ **18. FLOOR BRUSHES.** Fiber brooms, scrub brushes, wet mops, dry dusting, etc., available in variety of sizes and weights for every need, are described in catalog. The Fuller Brush Co.

☐ **19. FASTENINGS**—Bolts, Nuts, Rivets, Screws, etc., of bronze, brass, copper, everdur, monel and stainless steel. Unaffected by ocean salt, tropic sweat, certain acids and alkalies. Eighty-page catalog and reference book contains 193 illustrations, numerous tables and other data. The H. M. Harper Co.

☐ **20. ABRASIVE BELTS**—3-M Method of polishing and finishing with abrasive belts and segment face contact wheels for speeding up production is described in booklet. Minnesota Mining & Mfg. Co.

☐ **21. PARTS BAGS**—Samples of parts bags for making sure that small parts, accessories and replacements are attached to products and on the spot when needed, may be had for the asking. Bags may be had in variety of types and sizes and with or without tags or envelopes attached. Chase Bag Co.

☐ **22. WOOD SHELVING & STORAGE Units**—Catalog describes line of wood shelving which is said to be simple to adjust to meet changing storage requirements. Storage may be adjusted every 3

(*Continued on page 12*)

PURCHASING 205 EAST 42ND ST., NEW YORK, N. Y.

Please send me the "Know-How" Information checked.

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11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐ 17 ☐ 18 ☐ 19 ☐ 20 ☐
21 ☐ 22 ☐

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

7/15

Four Pages of "Know How"—10-12-14-16

DON'T DO THAT!
FILE-FLINGIN' FREDDIE!- WHEN HE CAME OFF TH' ASSEMBLY LINE, TH' STORK FORGOT HIS BRAINS!
HE KIN TAKE TH' BITE OUTA MORE FILE-TEETH THAN A STUDENT DENTIST WITH A BUZZ-SAW! POP'LL MASSACRE 'IM!
ALEXANDER

FREE REPRINTS of this ad for shop-board tack-ups

IT'S Pop, the foreman. And is he mad! Like any good production head—or mechanic—Pop knows what happens to a file when tossed among other files or tools. Even a few battered teeth can cause skips—throw the filing stroke out of stride—waste time—reduce stock removal—destroy filing accuracy. To say nothing of greatly shortening the useful life of the file.

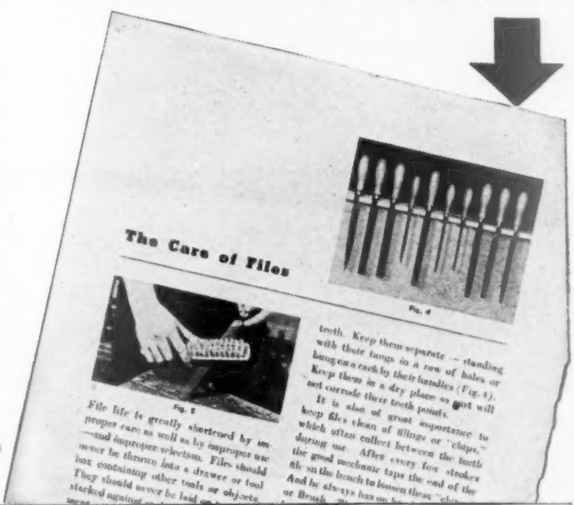
High-geared war production is too important to permit tool, tool-steel, and man-hour wastage of this sort. It defeats the very objectives of quality file manufacture. In Nicholson and Black Diamond files, Nicholson goes to great pains to provide the toughest, sharpest and most uniform files it is possible to produce. A moment of carelessness in their use can undo much of this great care in their manufacture.

The right file for the job and *Twelve perfect files in every dozen* are long-standing guarantees in the Nicholson policy of providing industry with the utmost value for every file-purchasing dollar.

NICHOLSON FILE CO. • 28 ACORN ST., PROVIDENCE 1, R. I., U. S. A.

(Also Canadian Plant, Port Hope, Ont.)

FREE BOOK "FILE FILOSOPHY," the Nicholson 48-page book on files and filing, includes useful information on the care of files. FREE to purchasing and production heads, foremen and key mechanics.



NICHOLSON FILES

FOR EVERY PURPOSE

NICHOLSON U.S.A. MADE IN U. S. A.

"Know-How" Information, Continued

USE COUPON ON EACH PAGE

in. vertically and horizontally. "Engineered in Wood for the Duration". Lyon Metal Products, Inc.

☐ **23. TORQUE WRENCHES**—Bulletin describes complete line of permanently accurate torque wrenches for gauging and controlling torque in production and for testing and measuring in inspection. No friction adjustments; no moving parts. P. A. Sturtevant Co.

☐ **24. SALT TABLETS**—Hot weather is coming. Workers will need salt tablets. Illustrated price list describes dispensers designed for use in large and small organizations, and special packages for isolated jobs. Standard Safety Equipment Co.

☐ **25. CUTTING TORCHES.** Welding Torches, tips, cylinder gas 'safety' regula-.ors, combination units for welding and cutting, manifolds, connectors, cylinder trucks and other accessories are illustrated in hard-cover catalog & price list. Victor Equipment Co.

☐ **26. PLASTICS.** A new 20-page booklet describes Durez molding compounds, industrial resins, and oil soluble resins. Booklet is said to be of particular value to manufacturers contemplating using plastics. Durez Plastics & Chemicals, Inc.

☐ **27. SAMPLE FREE—ABRASIVE Sanding disc.** Manufacturer says Marvel abrasive sanding discs have following qualities —Fast cutting, long lasting, cool running, non-clogging, safety in use. Fibre Abrasive Corp.

☐ **28. MARKING TOOLS**—Hand operated marking machines for stamping all sizes of shells, gun carriage parts, steel flanges, and special safety sleeve holder for marking gun barrels, small tubes and also for numbering stock in warehouses or stockrooms, are described in bulletins. M. E. Cunningham Co.

☐ **29. ZINC PLATED STEEL**—Electro zinc planted steel sheet for many war applications is described in small circular. Gauges .008" to .062" and heavier. It is said to be a satisfactory substitute in performing the work of nickel, tin, aluminum, brass or copper, or pinch-hitting for vital plated metals which employed various critical finishes. American Nickeloid Co.

☐ **30. SOLVENT DEGREASERS & CLEANERS**—New bulletin describes four available types of cyclodiene base hydrocarbon solvent degreasers and cleaners for metals. Describes painting or lacquering on the wet surface immediately after work comes out of the bath. Colonial Alloys Co.

☐ **31. CLEAN AIR AND GAS LINES**—Bulletin describes Aridifier, a compact, cast unit which is placed in the line and removes moisture, dirt, oil and fine scale which might otherwise damage tools and equipment. By removing moisture from compressed air, it eliminates freezing, fouling, corrosion and undue tool wear, clogging of orifices, etc. Cleansing is by centrifugal force. Logan Engineering Co.

☐ **32. MANGANESE STEEL**—What standard austenitic manganese steel is, its properties and uses in various industries, gears, wheels, rollers, etc., material handling pumps, alloy heat treating and carburizing containers, etc., are profusely illustrated and detailed in 48 page book. Amsco.

☐ **33. FLEXIBLE METALLIC TUBING**—New catalog deals with general industrial applications of flexible metallic tubing, describes types used in the conveyance of oils, gasses and liquids. Complete data is given on available fittings. Many usual and unusual types of applications are pictured and described. Titeflex Metal Hose Co.

☐ **34. STORAGE TANK OIL HEATER**—Bulletin explains G-Fin element which assure a lasting bond between fins and tubes or pipes, explains advantages of the heater design, and explains different arrangements in which the heater is furnished. The Griscom Russell Co.

☐ **35. METAL CLEANING HANDBOOK**—Book provides an organized means of selecting cleaning materials, methods of use and types of washing equipment best adapted to efficient cleaning of various kinds and shapes of metal articles. Each of the four main classes of cleaning materials is discussed separately, indicating kinds of metals and articles for which it is best suited. Modern metal washing machines are described in detail. Magnus Chemical Co.

☐ **36. PREFABRICATED STEEL CONSTRUCTION**—Lindsay Structure for machine housings, refrigerator buildings, industrial buildings, truck bodies, ovens, processing rooms, unit coolers and other structures is described in complete detail in both words and picture in industrial, automotive and marine fields. Lindsay & Lindsay.

☐ **37. SURFACE CONDENSERS** — New booklet of 36 pages and more than 70 illustrations describes surface condensers. Discusses structural and design features, steam penetration, air removal equipment, marine condensers, cross-flow condensers, plant essentials, accessories, pumping equipment etc. Ingersoll Rand Co.

☐ **38. PITCH HOBS**—Small fine pitch hobs are the subject of new bulletin, which defines them as ranging from 30 to 200 diametral pitch (.104" to .015" CP) or finer. It explains general characteristics, accuracy factor, shifting, sharpening, and contains chart of small diameter limits and table of gear tooth parts in the fine pitch series. Barber Colman Co.

☐ **39. CONTRACT WORK**—24-page illustrated brochure outlines in detail production facilities and equipment available in two plants for handling contract work for other manufacturers. Company is interested in any current or post war contracts which involve reasonable number of facilities described. Ward Products Corp.

☐ **40. VACUUM PUMPS** — Bulletin describes new bellows-type vacuum pumps designed for production and laboratory applications. The pumps are available in three standard sizes. American Automatic Typewriter Co.

☐ **41. WELDING ELECTRODES**—A new electrode comparison chart helps to simplify buying of competitive welding electrodes. Chart details the principal AWS and ASTM electrode classifications and indicates which electrodes produced by 20 leading manufacturers meet the different requirements. Copy for the asking.

☐ **42. NEAR INFRARED PROCESS** for baking, drying, dehydrating, preheating and similar operations is described in 12-page bulletin. Illustrations and diagrams show uses from drying labels to reclaiming steel plates. Fostoria Pressed Steel Corp.

☐ **43. FOR REMOVING PAINT.** Dopes, Lacquers, Enamels, adhesives, etc., from the hands. Circular describes cleaning compound that makes it unnecessary to use toxic and explosive solvents. Dennis Chemical Co.

☐ **44. DISTRIBUTING PANELBOARDS** — Saflex Power distribution panelboards are

(Continued on page 14)

PURCHASING 205 EAST 42ND ST., NEW YORK, N. Y.

Please send me the "Know-How" information checked.

23 ☐ 24 ☐ 25 ☐ 26 ☐ 27 ☐ 28 ☐ 29 ☐ 30 ☐ 31 ☐ 32 ☐ 33 ☐
34 ☐ 35 ☐ 36 ☐ 37 ☐ 38 ☐ 39 ☐ 40 ☐ 41 ☐ 42 ☐ 43 ☐ 44 ☐

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

7/43

The TOP QUALITY steels are ELECTRIC FURNACE STEELS

ARISTOLOY STEELS

The chemical analysis and specifications of top quality steels, such as stainless, aircraft quality, special alloy, etc., must be precision controlled. The electric furnace is the most efficient method by which the steel maker can hit these close specification marks consistently and accurately.

Aristoloy Steels are made only in electric furnaces. Today, they are fighting and flying in battle. Tomorrow, they not only will fly, but will perform everyday miracles for all of us in the form of new, peacetime products.

ARISTOLOY ELECTRIC FURNACE STEELS HIT THE MARK

COPPERWELD STEEL COMPANY · WARREN, OHIO

ARISTOLOY STEELS

AIRCRAFT QUALITY STEELS
BEARING QUALITY STEELS
CARBON AND ALLOY TOOL STEELS
STAINLESS STEELS · NITRALLOY STEELS

ELECTRIC FURNACE STEELS

"Know-How" Information, Continued

USE COUPON ON EACH PAGE

described in bulletin. Approved by Underwriters Laboratories, Inc. Panels are described as safe, flexible, convertible. Square D Company.

☐ **45. ELECTRICAL INSULATION** — Bulletin describes "Thermobonds, the New Insulation", and ten insulating mediums that have been thoroughly tested for excessive heat, heavy overloads, and atmospheres filled with acid or alkali fumes and abrasive materials. Thermobonds are produced for application to high speed armatures, high cycle drill and grinder motors, heavy duty motors and transformers, and marine engine magneto coils. Sterling Varnish Co.

☐ **46. DIE STEEL**—Air hardening die steel for high production is described in bulletin. The name is Cromoco and it is said to harden satisfactorily in air. Wearing or cutting capacity is said to be considerably better than that of dies made of highspeed steel. Cromoco steel is used for cutting and forming dies such as lamination, blanking, stamping, cold forming, extrusion, etc. Firth-Sterling Steel Co.

☐ **47. NEW COATING MATERIAL**—Its name is Ucilon, and it is recommended for extremely corrosive conditions. It is a synthetic resin coating that is said to be tough and flexible and resistant to organic and inorganic acids, alkalis, salts, alcohol, oils, etc. It also is said to have excellent dielectric strength, and can be readily applied to wood, metal, concrete and other surfaces by brushing, spraying or dipping. Ask for 12-page bulletin. United Chromium, Inc.

☐ **48. PRODUCTION INSPECTION DIAL** Indicators—Bulletin describes the Testmaster, universal Dial indicator which comes in two models, No. 1 being graduated in .001", and No. 2 in .0001". Rachet index point locks in place and will not come out unless taken out. Federal Products Corp.

☐ **49. CARBIDE DIE** Manual and Catalog, covering standard and special dies for drawing wire, bar, tubing and sheet metal. This 32 page manual gives detailed recommendations on die shapes, along with listing of suggested die room accessories, supplies and equipment. Carboloy Co.

☐ **50. METAL WORKING Equipment**—New handy catalog lists Barth machines and tools, including foot squaring shear, slip roll forming machine, bar folder, slitting and rod shears, combination rotary machine, beading machine, crimping machine, grooving machine, brace and wire bender, etc. Barth Manufacturing Co.

☐ **51. WIRE PRODUCTS**—Bulletin shows some of the many uses for wire parts and shapes, to replace solid surfaces, such as shelving, baskets and carriers, guards or grills, forms, brackets, hangers, racks, etc. Company offers complete wire working facilities. Union Steel Products Co.

☐ **52. ELECTRIC BONDER**—Bulletin folder describes Mogul Electric Bonder, time and money saving unit for preparing hardened metal surfaces for metallizing. Operates on 220 volts, 60 cycle line. It is said to eliminate guesswork in preparation, carbon ring characteristic of some methods, and necessity of a lathe. Works equally well on all metals. Metallizing Co. of America.

☐ **53. INFRARED PRINCIPLE Gas Burners**—Sixteen page catalog describes burner for use in soft metal melting, varnish cooking, paint drying, annealing, food processing, industrial high pressure steam boilers, heating systems, and other uses. Generates infrared rays. About 99% of radiation is said to be in the form of efficient infrared rays. Speed and power of heat transmission is said to be four times greater than any other known source. Void of focal or hot spots. Burns any commercially available gas. The Burdett Mfg. Co.

☐ **54. REMOTE CONTROLS**—Shaft Joints and Assemblies, hinged and universal types, with operating ranges from 0 deg. to 360 deg., are detailed and explained in blueprint type catalog on Beco flexible shaft joints and accessories. Two main divisions of catalog cover the consolidated hinged joint (0° to 92°), and Brooks universal joint with effective operating range 0° to 360°. Brooks Eqpt. Corp.

☐ **55. EFFICIENT PACKING**—Booklet and circular describe Kimpak creped wadding which is available in specialized types to meet every packing requirement—heavy machinery, precision instruments, ordnance equipment, tools, light bulbs, drugs, medical equipment, aircraft parts, or the most fragile glass container. Material is clean, soft, resilient, non-corrosive, and non-scratching. Kimberly Clark Corp.

☐ **56. SOLENOID CONTACTOR** — Bulletin describes new lightweight, solenoid aircraft contactors, designed to U. S. Army Air Force Specifications, for intermittent duty and continuous duty. Operate in all positions; all moving parts are enclosed; tested for operation at altitudes up to 40,000 feet. Can be disassembled with screwdriver and pliers. Guardian Electric.

☐ **57. TIME DELAY RELAYS**—Bulletin describes synchronous motor driven time delay relay, for the automatic control of all types of electrically operated machinery or industrial processes in which accurately controlled time function is necessary. The R. W. Cramer Co., Inc.

☐ **58. WOOD PRESERVATIVES** — Eight-page brochure, "Laucks Wood Preservatives" describes low-cost wood treatments for plant application, and methods of treatment for protecting wood from moisture and fungi decay. Chart shows methods of application and needs for different types of preservatives including water-repellent, toxic and toxic water-repellent solutions. I. F. Laucks, Inc.

☐ **59. AIR COOLED TRANSFORMERS** — "Power Where You Need It" is new Acme bulletin describing air cooled transformer applications. Describes in detail various types and lists the complete range of 55 degree ratings in auto type, two winding type, three winding type and four winding type transformers up to 50 KVA. Acme Electric & Mfg. Co.

☐ **60. INDEXING DUAL CLASSIFICATIONS** —Dual diagonal margin cards developed to solve the problems of indexing dual classifications, and to increase the speed of record keeping are described in special bulletin with sample of forms. From visible margins the operator is able to secure complete information as to total stock balance on each item and on each breakdown. Visible Index Corp.

☐ **61. PRECISION AUTOMATIC SCREW** Machine — Sixteen-page catalog details facts of operation and production, New Gorton 16-A automatic screw machine. Produces parts complete in one operation from bar stock, and will produce small, close-tolerance parts in large quantities. Produces long or short slender pieces in multiple diameters—threaded, tapered and knurled, and back recesses, centers, drills and taps. George Gorton Machine Co.

☐ **62. GRINDING ATTACHMENT** — Bulletin covers radius grinding attachment designed for use on Cincinnati No. 2 Cutter and Tool Grinder. It is said to be exceptionally handy for sharpening die sinking cutters, ball-end cutters, double-end cutters and similar cutting tools. Cincinnati Milling & grinding Machines, Inc.

(Continued on page 16)

PURCHASING 205 EAST 42ND ST., NEW YORK, N. Y.

Please send me the "Know-How" Information checked.

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NAME_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

7/43

Check Each Page of "Know How"—10-12-14-16

Here's how SKILSAW TOOLS BOOST PRODUCTION at LINDBERG ENGINEERING CO.

SKILSAW PORTABLE GRINDERS—Speed up all grinding, wire brushing, buffing and polishing on metal surfaces . . . remove rust, scale, paint, etc.

SKILSAW DISC SANDERS—For faster sanding on flat or curved surfaces of wood, metals, compositions. For grinding down raised welds, surfacing, preparing for finishes, buffing and polishing.

ARMY-NAVY "E"

Ask over at Lindberg Engineering Company . . . and you'll hear plenty about the speed of SKILSAW TOOLS in turning out essential heat-treating equipment. Look around the Lindberg plants that fly the Army-Navy "E" . . . and you'll see plenty of SKILSAW TOOLS in action . . . speeding up countless drilling, sawing and surfacing operations!

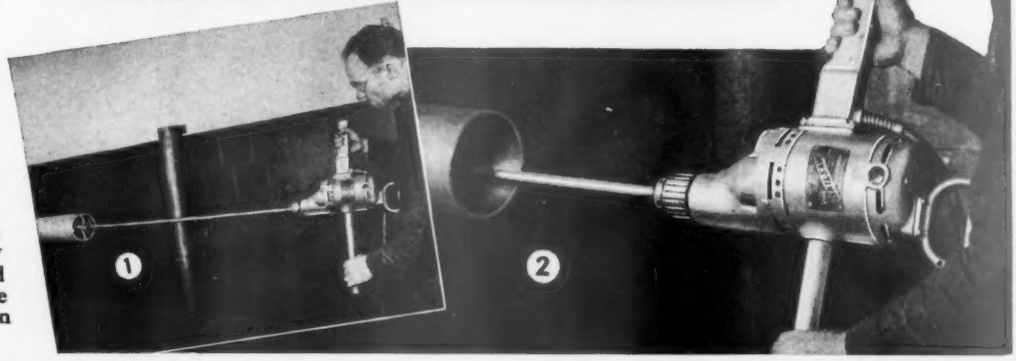
Here's the reason! SKILSAW TOOLS are lighter, more compact, more powerful. They're *preferred* by workers and management alike because they *handle easier* . . . do more jobs *better* . . . and stand up *longer* under today's toughest conditions. Ask your distributor to prove it with a demonstration of SKILSAW TOOLS on your own work *today!*

SKILSAW, INC., 4761 Elston Ave., Chicago, Ill.

New York • Boston • Buffalo • Philadelphia • Cleveland • Detroit
Indianapolis • St. Louis • Kansas City • Atlanta • New Orleans
Dallas • Los Angeles • Oakland • Portland • Seattle • Toronto, Canada

SKILSAW PORTABLE ELECTRIC TOOLS

★ MAKE AMERICA'S HANDS MORE PRODUCTIVE ★



1. With a special rig devised by Lindberg engineers, SKILSAW Model 123 DRILL hones the interior of this air-tight steel cylinder; replaces complicated hard-to-get machinery.

2. Honing rig on long shaft (smoothly driven by SKILSAW DRILL) is moved forward and back by operator, to produce the polished high precision surface necessary.

"Know-How" Information, Continued

USE COUPON ON EACH PAGE

☐ **63. STAINLESS STEELS**—"The Fabrication and Surface Treatment of Stainless Steels" is subject of special report which discusses machining stainless steel, describes effective tool grinding, gives formulae for lubricating different grades, discusses rough and finish grinding, surface preparation, etc. Oakite Products, Inc.

☐ **64. DUST COLLECTORS**—Bulletin covers Dustube dust collectors which are said to save power, to be easy to install, easy to inspect and keep clean, and "Efficiency by weight is 98% and more". American Foundry Equipt. Co.

☐ **65. CABLES**—How to make wire cables last longer by proper treatment and lubrication is outlined in small easy-to-read booklet. Company also offers samples. The Keystone Lubricating Co.

☐ **66. UNIT HEATERS** — Propeller fan, horizontal discharge unit heater, and five-way, vertical discharge, propeller fan unit heater with 2, 3 or 4 warm air discharge outlets, are described in two Carrier bulletins. Each of the models is said to utilize about one-fifteenth the basic materials used in direct radiation for the equivalent amount of heating. Carrier Corp.

☐ **67. MEASURING & CONTROL Instruments**—Condensed Catalog and Price list provides convenient listing of measuring and control instruments and accessories, including proportioning controls, electronic controls, heating and cooling temperature time cycle controllers, recording or indicating thermometer controllers, etc. Wheelco Instruments Co.

☐ **68. HAND POWER TOOL** — Special bulletin describes Precise-35 which is said to be unique among electric hand tools. Under load it runs 35,000 RPM, and at full load develops 1/6 HP. High speed is said to result in smoother, faster work and "wheels and cutters live twice as long". Can be used on metals of any character. Precise Products Co.

☐ **69. COAL STORAGE**—Small circular describes Kleen-Kol, a chemical concentrate which when sprayed over coal pile saves windage losses, retards oxidation reducing tendency toward hot-spots, and makes for unusual cleanliness. Sterling E. Norcross.

☐ **70. KOROSEAL LININGS for tanks.** Catalog section on new sheet Koroseal linings for tanks made of welded steel, wood or concrete describes resistance to strong corrosives such as nitric and chromic acids, and contains two pages of tables showing the resistance to solutions of inorganic acids, solutions of inorganic salts and alkalis, plating solutions and organic materials. Koroseal is a synthetic elastic with many rubber-like qualities. B. F. Goodrich Co.

☐ **71. GRINDING WHEELS**—Open structure grinding wheels with large pores for jobs requiring comparatively heavy stock removal or extra coolness of cut or both, are covered in recent 6-page bulletin. Norton Co.

☐ **72. ELECTRIC GAGES**—"21 Electric Gages to Aid Production" is the subject of new 8-page article reprint issued by General Electric Company. It describes the functions of the 21 gages and contains a chart showing schematic representations of electric gage circuit applications. Among the gages described are thickness, magnetic, electrolimit, pressure, strain, and eccentricity gages.

☐ **73. FLUORESCENT Fixtures for War Industry**—Catalog describes new line that meets industry's needs for fluorescent lighting, and is simple, flexible and economical to install. Line has non-metal reflectors with high reflection factor, and meets all requirements of WPB and U. S. Bureau of Standards, and is Underwriters Laboratories and E.T.L. Fleur-o-lier approved. Mitchell Mfg. Co.

☐ **74. DERMATOSIS**—New brochure treats of industrial dermatosis in non-technical terms so that anyone responsible for safeguarding the health and welfare of employees will find it helpful. Title is "Production Safeguards Against Dermatitis". West Disinfecting Co.

☐ **75. CASTOR CLEANER** for degreasing gears, parts, metal surfaces, industrial machinery, dirty motors, airplane fusilages, factory walls, painted surfaces and concrete floors is described in single page bulletin. Konag Castor Cleaner is said to be safe, efficient, and economical. National Graphite Co.

☐ **76. ROADWAYS**—Use of calcium chloride for low-cost roads and base development, emergency roads and airport runways and yard areas is explained thoroughly in bulletin issued by the Calcium Chloride Association. Book also tells of economies of maintenance with calcium chloride.

☐ **77. CLEANING FINE PARTS and Precision Parts**—Folder describes L & R equipment and solutions for cleaning precision parts ranging from hair springs to screw machine products, jewelled bearings, etc. Process is said to be four to five times better and faster. L & R Mfg. Co.

☐ **78. RADIO GRAPH IDENTIFICATION**—System for identifying radiographs made in examination of castings, forgings and machined parts for structural defects, is described in small circular. Lead letters and figures record identifying data on the film. These come in several sizes of handy sets. Figures mounted on celluloid tabs for special work also available. H. W. Knight & Son.

☐ **79. CAPACITORS** — Standardized oil paper capacitors for government and industrial electronic applications are described in bulletin on mineral oil impregnated and filled tubular paper capacitors and mineral oil impregnated and filled paper capacitors in drawn metal containers, and mineral oil impregnated and filled paper capacitors in rectangular metal containers. Solar Capacitor Sales Corp.

☐ **80. ABRASIVE WHEELS** Dressing, Form-Master as an all purpose dresser for both angles and radius is described in four page bulletin. Tolerance easily within .001"; Range: angles—any desired angle; convex radii—to 4" on 7" wheel; concave radii—to 7" on 7" wheel. On 10" wheel, convex radius of 1" is obtainable. Simple to operate. J. & S. Tool Co.

☐ **81. INDUCTION HEATING** — Catalog describes new induction heating units, typical applications and heating coil fixtures employed for various jobs, and other applications with the unit such as brazing, soldering, annealing, forging and melting. Results are said to be positive and uniform. Van Norman Machine Tool Co.

☐ **82. ARC WELDERS**—Type WD, direct current, single operator arc welders are discussed in a new 12-page bulletin recently issued by the General Electric Company. The bulletin describes the operation of these engine- or motor-driven welders, and illustrations show construction details; also, it lists the advantages ascribed to the Type WD welders.

☐ **83. CONVECTION HEATED OVENS** for batch and continuous heating processes. The subject is covered in "Blueprint for Industry", blue-print type 18-page book which shows typical installations and material handling equipment, describes various types of ovens, and continuous system for pickling, rinsing, scrubbing, drying, paint dipping and baking of steel sheets. Industrial Oven Engineering Co.

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83 ☐

NAME_____

COMPANY_____

ADDRESS_____

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7/43

New Wire Rope Simplification Plan Welcomed by Users

In this, the 16th of a series of informative articles on wire rope, the Macwhyte Wire Rope Company presents a condensed report of "Simplified Practice Recommendation R198-43." This sound and widely discussed plan was developed through the combined efforts of the National Bureau of Standards and engineers of the Wire Rope Industry. This timely information will be most useful to wire rope users.

* * *

For many years, both wire rope users and the wire rope industry have hoped for a reduction and simplification of the number of wire rope items. The wide variety of items was not only confusing to users, but also increased the problems of manufacturing and stocking so many different ropes.

Shortly after Pearl Harbor, it became obvious that both a steel and a manpower shortage would develop. Since reduction and simplification of wire ropes would help save steel, conserve time and manpower, and expedite deliveries, the Bureau of Standards worked out a plan described in "Wire Rope Simplified Practice Recommendation R198-43." Copies may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. Price 10 cents. This plan is one which consumers, distributors and manufacturers have long wanted; not only as a wartime conservation measure, but as a basis for improved service afterwards.

What, briefly, is this simplification plan? How does it affect you?

The wire rope simplification program is concerned primarily with a reduction in the number of different sizes, varieties, and grades of wire rope produced for stock purposes.

Wire rope engineers working with the Bureau of Standards found that 20 wire rope constructions cover the vast majority of wire rope tonnage.

By adhering to these constructions, the number of ropes are reduced from 973 to 643, or 33.9%.

How Users Benefit

By reducing the number of "special" ropes, more attention can be paid to faster production of those ropes most widely used. Better service and delivery can be made to users as larger stocks will be available due to greater production of fewer items.

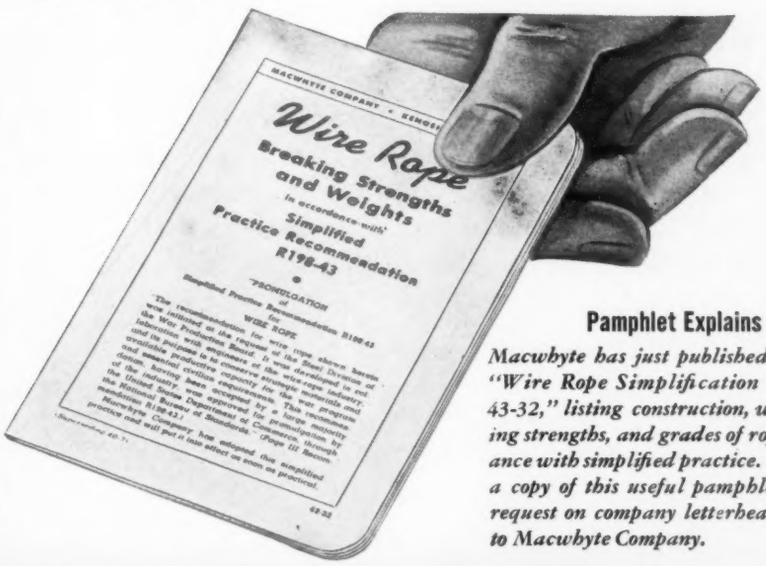
Your Cooperation

Hundreds of manufacturers, distributors, users, and all wire rope manufacturers have indicated in writing, their acceptance of this simplified wire rope practice which will result in increased efficiency for manufacturers, distributors and users . . . not only now but also in the post-war period.

Wire rope users can aid materially in the success of this program by voluntarily confining their specifications and orders, so far as possible, to the items recommended by the simplified practice program.

MACWHYTE WIRE ROPES

—the correct rope for your equipment.
PREformed and Internally Lubricated.



Pamphlet Explains All

Macwhyte has just published a pamphlet, "Wire Rope Simplification Practice No. 43-32," listing construction, weights, breaking strengths, and grades of ropes in accordance with simplified practice. If you care for a copy of this useful pamphlet, write your request on company letterhead and send it to Macwhyte Company.

NO. 681

MACWHYTE COMPANY

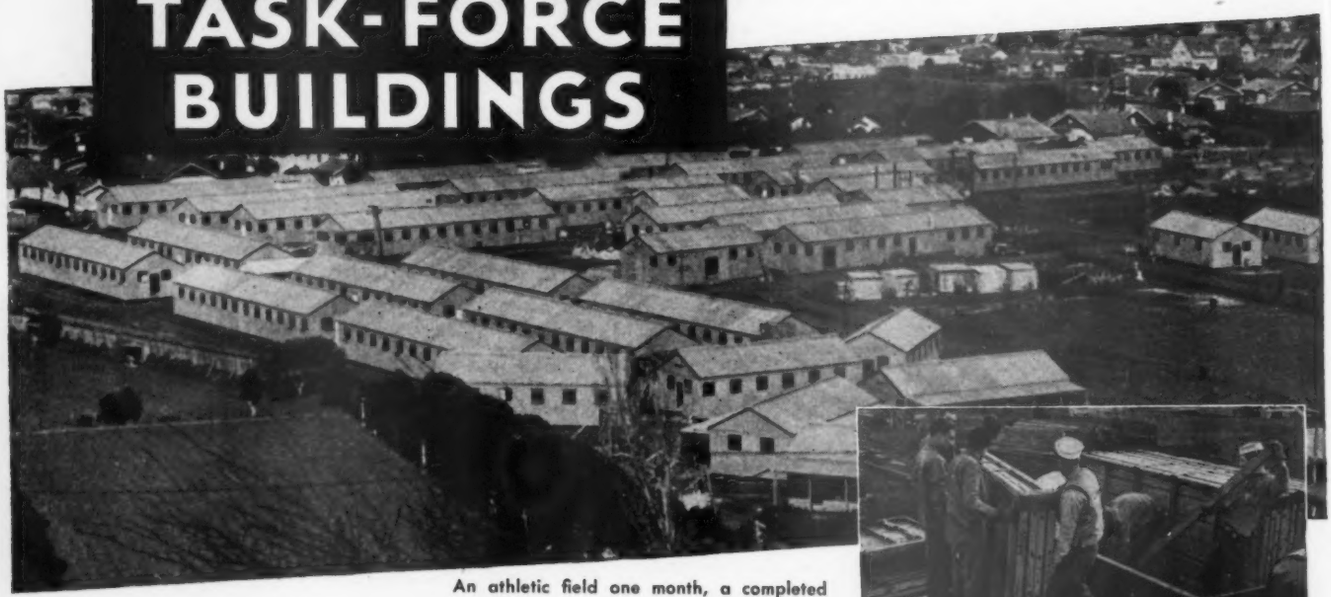
WIRE ROPE

2940 FOURTEENTH AVENUE KENOSHA, WISCONSIN

Mill Depots: New York · Pittsburgh · Chicago · Fort Worth · Portland · Seattle · San Francisco. Distributors throughout the U.S.A.
Manufacturers of MACWHYTE PREformed and Internally Lubricated Wire Rope MONARCH WHYTE STRAND Wire Rope
MACWHYTE Special Traction Elevator Rope MACWHYTE ATLAS Braided Wire Rope Slings MACWHYTE Aircraft Cables and Tie-Rods

DETROIT PUBLIC LIBRARY

On TASK-FORCE BUILDINGS



An athletic field one month, a completed hospital unit the next, thanks to prefabrication and ease of unit construction.

Unloading steel sections for construction of U. S. Mobile Base Hospital.

Task-Force Building of Prefabricated Steel erected in a few hours by officers and men.

Interior of a hospital building, insulated and comfortable.

Official U. S. Navy Photos

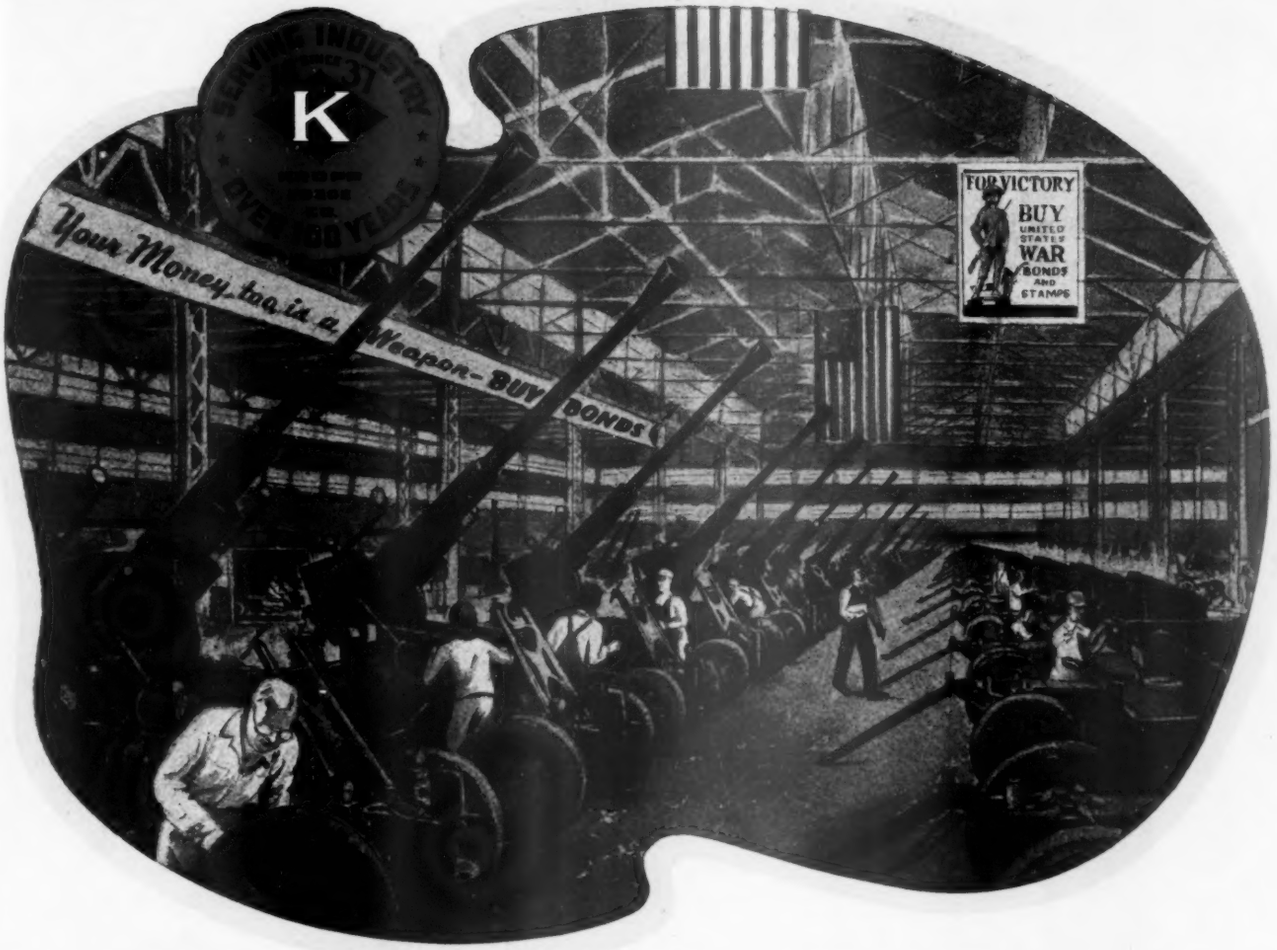
An EGYPTIAN Specification Finish on Task-Force housing projects is another recent example of the efficiency of these special finishes. Application to the prefabricated steel sections which nest compactly in ships' holds to be transformed at the far corners into hospitals, mess halls and living quarters for our armed forces, demonstrates EGYPTIAN'S capacity to "take it." Speed, and the ability to withstand rough handling and the extremes of heat and cold, are prime essentials. Task-Force buildings today may be civilian housing tomorrow and the manufacturer who is interested in this type of work would do well to look into EGYPTIAN FINISHES.

Our experience in furnishing Specification Finishes for wartime needs as well as a knowledge acquired during a half century of making industrial finishes assures the user of EGYPTIAN the correct finish best suited to individual requirements.

Your inquiry will receive prompt attention.

THE EGYPTIAN LACQUER MANUFACTURING CO.
ROCKEFELLER CENTER—NEW YORK, 20, N. Y.

EGYPTIAN *Superior* FINISHES



Let The Enemy War Birds Come!

America's anti-aircraft guns are giving our planes real competition in the grim job of depleting enemy air power. Their range and accuracy mows down enemy aircraft, or keeps them at such altitudes that their bombs fall wide. Their flexibility and rapidity in action has proved disastrous for dive and torpedo bombers, and mounted for rapid mobility, they won their spurs in Tunisia and the South Pacific, where they proved devastating against ground as well as air forces.

Back of the deadly work of these modern-day guns is not only advanced design but staunch construction. The impacts and stresses of rapid fire are taken in stride by the toughest of forged parts. At Kropp Forge, we take pride in the vast quantities of rugged forgings we are turning out for anti-aircraft guns, planes, ships, tanks, military vehicles and essential war machinery.

The inquiries of armament builders for forgings of all types are solicited.

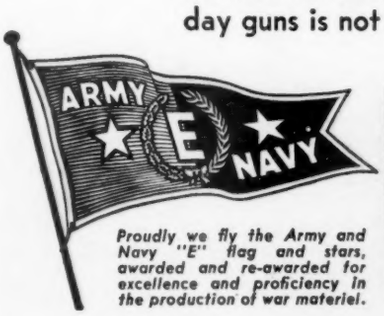
Kropp Forge Company

Makers of Drop, Upset and Hammer Forgings for Ships, Guns, Planes, Tanks, Ordnance and Machine Tools

"World's Largest Job Forging Shop"

5301 W. Roosevelt Road, Chicago, Ill.

Engineering Representatives in Principal Cities



Proudly we fly the Army and Navy "E" flag and stars, awarded and re-awarded for excellence and proficiency in the production of war materiel.

KROPP

PROTECTS

C/R mallets and hammers permit forceful, effective blows without battering, scarring or marring. They protect fine finishes, delicate insulation, hardened parts and costly machinery. They far outlast other mallets, hold a true striking face and, because they absorb recoil, they are less fatiguing on continuous use operations (as pounding in winding, assembly work, etc.). Speed production—reduce spoilage. All sizes. Weighted or unweighted. Hammers take replaceable insert faces.

Write for Catalog Sheets

CHICAGO Rawhide MFG. CO.
1294 ELSTON AVE. ★ CHICAGO, ILLINOIS

F.O.B. philosophy of buying

ONE of the best purchasing stories to come out of this year's convention was told by Bob Grube of Los Angeles at the meeting of the Educational Committee. Bob takes time out from a busy schedule to teach a class in purchasing at the University of Southern California, where he numbers among his pupils some of the new buyers for the gigantic West Coast aircraft industry. It was one of these men who presented a practical problem. The representative of a local steel warehouse had called at his office early one morning with the welcome news that his company had just received a carload of the precious metal, available for immediate delivery. He had with him a list of the items and sizes. Would the buyer care to check off any items which he could use—subject, of course, to prior sale? The buyer was delighted to do so, and eagerly initialed a goodly portion of the list. He wasn't one to let Opportunity's knock go unanswered. But the morning which had started so auspiciously was utterly ruined about an hour later, when the salesman telephoned apologetically with the bad news that when he had gotten back to the warehouse, every last item was gone.

The buyer, righteously indignant, rose in his wrath and demanded to know how this could be possible, for he had acted promptly and decisively, and had the salesman's assurance that his was the very first call offering the material. Well, it seems that one of the other aircraft companies had a steel buyer who made it a practice to go the rounds of all the warehouses every morning to see what was to be had—*and he carried a purchase order pad in his pocket*. As a result, the "cream of the crop" was bought on the spot for the rival manufacturer.

The problem: "Mr. Grube, don't you think that such tactics are unfair?"

Bob's answer, in case you haven't already guessed it: "Not at all. Such tactics are smart purchasing."

It takes a war and shortages to prove what purchasing leaders have been preaching and teaching these many years—that purchasing is a positive function, and that the desk-bound buyer is pretty sure to lag at the tail end of the procession.

• •

THE new President of N.A.P.A., chosen from the public utility field, carries on a tradition of service and leadership in which the utility group has made an outstanding contribution to the national organization. Among Ben Newbery's distinguished predecessors as National President are Lew Jones of the New York Power & Light Corporation, George Richardson of the Southern California Edison Company, and Mike Kelley of Southern Sierras Power Company — a splendid record for one sector of industry, and a tribute to the calibre of the men who do the buying for our utilities.

• •

THERE is food for thought in a bill recently proposed in the Connecticut General Assembly, giving life tenure to the position of City Purchasing Agent in Waterbury. The theory is that this position of responsibility should be free from the pressure of political favoritism and from the vicissitudes of party fortunes, so that the Purchasing Agent may concentrate on doing an honest and effective job in the expenditure of the public funds, just as the judiciary of our higher courts is relieved of political pressures which might conceivably tend to warp judgment.

Unfortunately, the idealism of this reform is more than a little clouded by the fact that it sets up no adequate tests or qualifications for the perpetual purchasing officer, that it is purely local in its proposed application, and that the individual whom it is designed to protect in office happens to be the brother-in-law of the Senator sponsoring the bill.

Perhaps some such safeguard should be written into the statutes governing public purchasing departments. We could point out many examples of able buying officials who have carried on the work of their office through successive changes of administration and of party, on sheer merit and efficiency, without benefit

of tenure. But the greatest impediment to popular acceptance of centralized public purchasing, with all its demonstrable advantages, lies in those other cases where the office has been regarded as a political plum regardless of the ability or record of the incumbent, or where weak or incapable appointees have prostituted the office and made it a matter of public scandal.

Tenure of office alone is not sufficient to improve this situation. Tenure should be predicated on (1) high standards of experience and qualification for purchasing, and (2) a salary scale that is commensurate with the responsibility and that will attract qualified men and women to the office on a career basis. Add reasonable security to this foundation, as under civil service regulations and the merit system, and public purchasing will attain the plane which it deserves. Without that foundation, tenure alone is likely to prove a greater evil than the situation it is ostensibly designed to correct.

• •

THE war has produced some new and strange quirks in marketing technique. City Purchasing Agents have become accustomed to receiving identical bids on some of their requirements and deciding the issue rather unscientifically by the toss of a coin. But the latest variation is the "joint bid"—a single quotation signed by all the hopeful suppliers, with the explanation that they will decide among themselves how the business is to be divided.

• •

AND then there's the P.A. at Haverhill, Mass., who got just one bid on the city's gasoline requirements—characterized by the supplier as a "courtesy bid" in view of the fact that his firm had supplied the gas during the past year. The other companies were unanimous in reporting that because of present conditions they were unable to quote.

• •

APROPOS of Al Hayes' convention remarks on the essentiality of purchasing men, there's a desk in the RKO purchasing office in New York City which claims some sort of a record for personnel turnover. Five service flags hang over this desk, representing five young men who have been yanked out of the job within a period of seven months by the Selective Service. Occupant No. 6, says the personnel manager grimly, has been handpicked to stay put.

WANTED: More Wire Rope
FOR ESSENTIAL WAR WORK

Every Wire Rope User Can Help

Your wire rope is *production* equipment . . . a moving part subject to the same factors of wear and tear as that of any other operating machinery.

OIL INDUSTRY

LOGGING

MANUFACTURING

SHIP BUILDING

CONSTRUCTION

MINING

WAR MACHINES

SHIPPING

The selection of the correct grade, size and type of wire rope . . . proper installation and equipment . . . consistent maintenance procedures — all will contribute to longer life thereby releasing more wire rope for the immediate Victory cause . . . a patriotic and profitable measure every wire rope user can employ.

May we send you a copy of "Practical Information on the Use and Care of Wire Rope"? — no obligation.

The day after day performance record of "HERCULES' (Red-Strand) **Wire Rope is demonstrating that it has what it takes to meet 1943 conditions. In "HERCULES" there is a "right" rope for every heavy duty purpose, as it is furnished in both Round Strand and Flattened Strand constructions — all of which are available in either the Standard or Pre-formed type.**

MADE ONLY BY
A. LESCHEN & SONS ROPE CO.
WIRE ROPE MAKERS — ESTABLISHED 1857
5909 KENNERLY AVENUE — ST. LOUIS, MISSOURI, U. S. A.

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Get That Saboteur!

Defective packing is largely responsible for war products arriving at destination in unusable condition. Defective packing is a saboteur that can ruin carefully manufactured products needed at the front.

Realizing the vital importance of efficient protection for war products in transit, foremost manufacturers in ever-increasing numbers select KIMPAK* Creped Wadding for this responsible job... KIMPAK is the remarkably resilient, soft, clean packing material that has won the confidence of manufacturers. For many years it has demonstrated its dependability by protecting countless peacetime products against shipping damage.

KIMPAK comes in rolls, sheets, pads and tubes in almost any desired size and thickness. It may be had in moisture *resistant* form as well as moisture *absorbent* form.

Make sure your products arrive in "fighting condition." Rid your plant of that destructive saboteur "Defective Packing"! Pack with KIMPAK. Save time and money in your shipping room.

For complete information about KIMPAK, mail coupon.

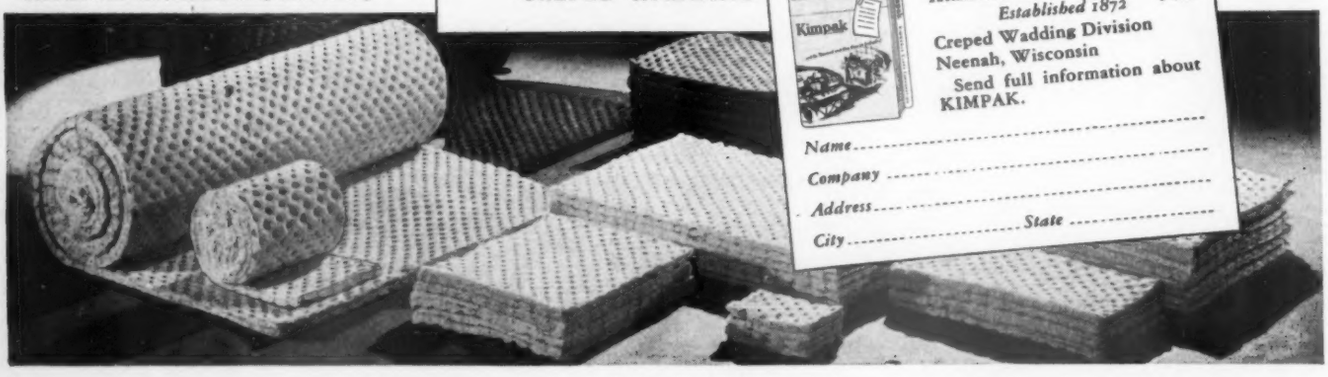
PACK WITH

Kimpak

REG. U.S. PAT. OFF. & FOREIGN COUNTRIES

CREPED WADDING

*KIMPAK (trade-mark) means Kimberly-Clark Wadding



Kimberly-Clark Corporation P-743
Established 1872
Creped Wadding Division
Neenah, Wisconsin
Send full information about KIMPAK.

Name .....
Company .....
Address .....
City ..... *State* .....

Western BRASS

Western brass should be considered in Your World of tomorrow . . .

. . . because brass possesses certain inherent characteristics for which man has never found a satisfactory substitute. Recent surveys show that approximately 60% of all large manufacturers already have ideas for new products. They, no doubt, will find in their own planning that there is no substitute for brass —particularly Western brass.

BRASS MILL DIVISION
Western Cartridge Company
East Alton, Illinois

Western BRASS PRODUCTS

Super-X
BRASS MILL PRODUCTS

Design for Lighting—Today and Tomorrow

● Simple and modern in design, the new Sylvania fluorescent fixture meets all normal industrial lighting requirements.

It is another fluorescent first for Sylvania – this all-purpose standardized fixture of the future.

The streamlined top-housing, which weighs less than three pounds, encloses the ballast and protects it from dust.

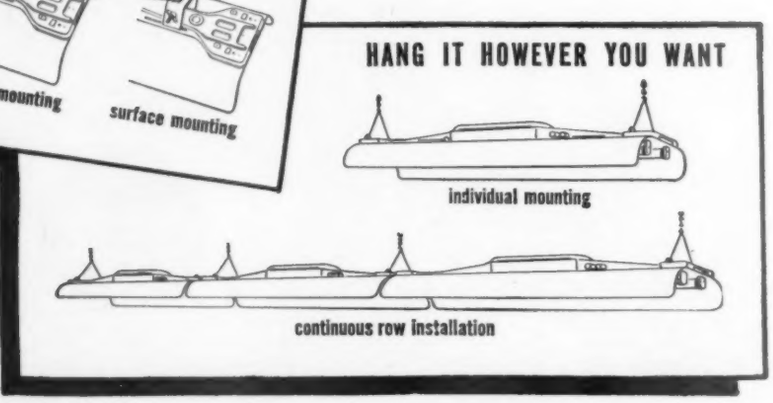
Optional knockouts permit any known type of mounting. And it fits into any lighting plan – individual or continuous row.

Two or three lamps can be used, depending on light output desired.

There is an accessible starter socket and knockout provision for a pull chain if need be.

The fixture is equipped with a light and durable composition reflector that has a designed-in efficiency of 86 per cent – even higher than that of porcelain-enameled metal in conventional contours. This reflector stands up under extreme temperature and humidity conditions. "Captive Latch" fastenings that require no tools for removal make it easy to service.

The Sylvania fixture of the future is available in 40-watt and 100-watt lengths. It carries Underwriters' Laboratories approval and our own 90-day guarantee. And it meets governmental requirements in every particular. For full details, write Dept. M&F 7.



SYLVANIA

ELECTRIC PRODUCTS INC.

Formerly Hygrade Sylvania Corporation
Ipswich, Mass.

INCANDESCENT LAMPS, FLUORESCENT LAMPS, FIXTURES AND ACCESSORIES, RADIO TUBES, ELECTRONIC DEVICES.

BELTING AND HOSE WITH A THUMB

Man owes his handiness to his thumbs. It is the thumb that gives grip to the hand. It is the thumb that enables man to master and control physical activity.

The thumb represents the power and capability that sets man apart from other creatures—so we use it to symbolize the extra something that distinguishes Thermoid belting and hose and other industrial products.

The engineers and production experts who build Thermoid Industrial Products approach their work with a knowledge of end-use problems. Beyond their equations and specifications, these men see the millions of tons of material that will be carried on a conveyor belt . . . the miles of seams to be made with a length of welding hose.

The Thermoid name on industrial products is proof positive to everyone in your organization—from the President down—that the Purchasing Agent is giving Production and Maintenance the best that can be had.

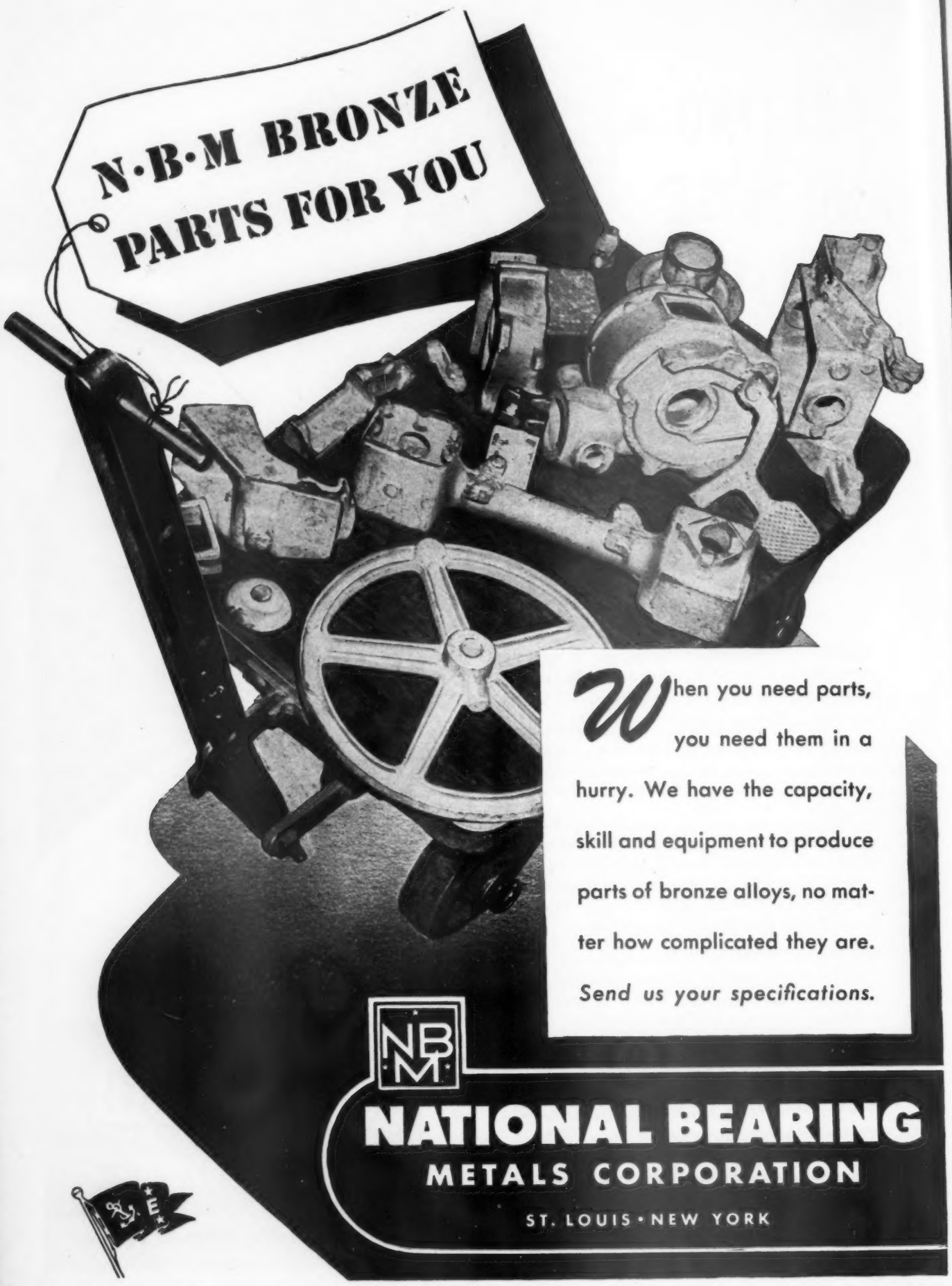
P.S. In line with material conservation, Thermoid has prepared a series of bulletins on how to extend the life of rubber products now in use. You might find them helpful to be passed on as reminders to your operating people. Feel free to ask for copies.

THE THERMOID LINE INCLUDES: Transmission Belting • F.H.P. and Multiple V-Belts and Drives • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Sheet Packings • Industrial Brake Linings and Friction Products.

Thermoid Rubber

DIVISION OF THERMOID CO.
TRENTON, NEW JERSEY

IT'S GOOD BUSINESS TO DO BUSINESS WITH THERMOID



When you need parts, you need them in a hurry. We have the capacity, skill and equipment to produce parts of bronze alloys, no matter how complicated they are. *Send us your specifications.*

NBM

NATIONAL BEARING METALS CORPORATION

ST. LOUIS • NEW YORK

PLANTS IN: ST. LOUIS, MO. • PITTSBURGH, PA. • MEADVILLE, PA. • JERSEY CITY, N. J. • PORTSMOUTH, VA. • ST. PAUL, MINN. • CHICAGO, ILL.

SECRETARY ICKES,

WE'RE GLAD WE CAN HELP

Incorporated 1850

Pennsylvania Salt Manufacturing Co.
Manufacturing Chemists.
Widener Building
Philadelphia

Leonard T. Beale
President

June 12, 1943

The Honorable Harold L. Ickes,
Secretary of the Interior,
Washington, D. C.

My dear Mr. Secretary:

The important problems that confront you as Petroleum Administrator are indeed many and varied. You have been faced with the need for immense quantities of motor fuel for mechanized warfare -- gasoline for civilian transportation -- oil to heat homes -- and for greater production of high octane aviation gasoline. And you are handling this difficult situation with admirable foresight and enterprise.

In the production of more high octane gasoline for the nation's fast-growing air might, we are happy to be of direct help. Anhydrous hydrofluoric acid is the important new catalyst in a new alkylation process for speeding the production of this high power fuel. Our company is a pioneer manufacturer of this important catalyst and is greatly expanding its production facilities to meet the growing demand.

While, in the over-all picture, we are but a single company cooperating on one of your problems, it is a contribution in which we take special pride ... Other of our products are serving in other ways and our organization is continually seeking further opportunity to aid the war effort.

Yours for Victory,

Leonard T. Beale

PENN SALT
Chemicals

Arm Your Screw Driving Army for SPEED TACTICS

TIME STUDY REPORT
OPERATION 15010 PIECE NO. 23
DATE Apr. 22-42 TIME 3-4 P.M.
COMPARISON Power driving of screws with Phillips Recessed Head and ordinary slotted screws.
WORKER'S BADGE NO. 3491 SEX Male AGE 42
NO. OPERATIONS STUDIED All screws for unit 15010
WORK ANALYSIS: Left-hand using 4 slotted head screws
worker used 15 minutes to drive the screws;
with the Phillips Head only 11 minutes 4 secs.
It's faster

SPEED-UP WITH PHILLIPS SCREWS!

Give your assembly line Phillips Recessed Head Screws and you'll give them the ammunition to clean up lagging assembly jobs on the double-quick!

In most cases, change-overs to Phillips Screws have cut driving time in half! All of the screw driving troubles that slow-up work are eliminated by the Phillips Recessed Head. The scientific recess, by automatically centering the driving force, prevents fumbling, wobbly starts . . . prevents slant-driven screws . . . burred and broken screw heads . . . dangerous screw driver skids.

The Phillips Recess lends "old-hand" skill to the newest newcomer . . . makes fast, faultless driving automatic. It permits power or spiral driving on almost any job.

They cost less to use! Compare the cost of *driving* Phillips with that of slotted head screws. You'll realize that the price of screws is a minor item in your total fastening expense . . . that it actually costs less to have the many advantages of the Phillips Recess!

KEY TO FASTENING SPEED AND ECONOMY

The Phillips Recessed Head was scientifically engineered to afford:

Fast Starting – Driver point automatically centers in the recess . . . fits snugly. Screw and driver "become one unit." Fumbling, wobbly starts are eliminated.

Faster Driving – Spiral and power driving are made practical. Driver won't slip out of recess to injure workers or spoil material. (Average time saving is 50%.)

Easier Driving – Turning power is fully utilized by automatic centering of driver in screw head. Workers maintain speed without tiring.

Better Fastenings – Screws are set-up uniformly tight, without burring or breaking heads. A stronger, neater job results.

PHILLIPS *Recessed Head* SCREWS

WOOD SCREWS • MACHINE SCREWS • SELF-TAPPING SCREWS • STOVE BOLT

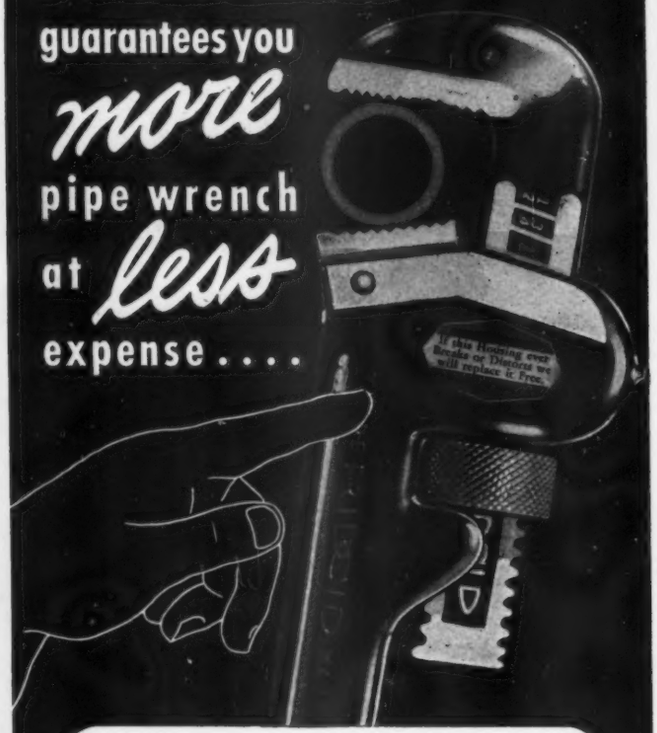
21 SOURCES

American Screw Co., Providence, R. I.
The Bristol Co., Waterbury, Conn.
Central Screw Co., Chicago, Ill.
Chandler Products Corp., Cleveland, Ohio
Continental Screw Co., New Bedford, Mass.
The Corbin Screw Corp., New Britain, Conn.
The H. M. Harper Co., Chicago, Ill.
International Screw Co., Detroit, Mich.
The Lamson & Sessions Co., Cleveland, Ohio
The National Screw & Mfg. Co., Cleveland, Ohio
New England Screw Co., Keene, N. H.
The Charles Parker Co., Meriden, Conn.
Parker-Kalon Corp., New York, N. Y.
Pawtucket Screw Co., Pawtucket, R. I.
Pheoll Manufacturing Co., Chicago, Ill.
Reading Screw Co., Norristown, Pa.
Russell Burdsall & Ward Bolt & Nut Co., Port Chester
Scovill Manufacturing Co., Waterville, Conn.
Shakeproof Inc., Chicago, Ill.
The Southington Hardware Mfg. Co., Southington, Co
Whitney Screw Corp., Nashua, N. H.

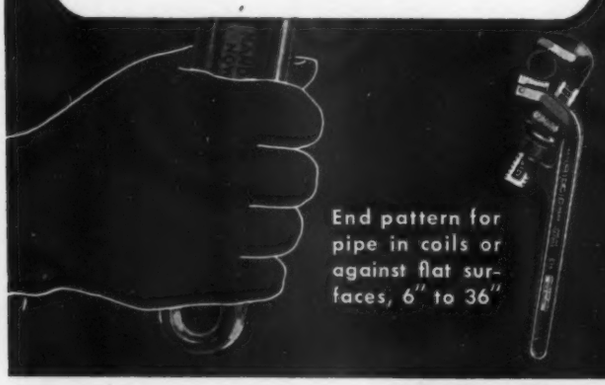
ON TARGET!
Because American Industry got "on target" so quickly after Pearl Harbor, America's fighting forces today are able to meet our enemies on better than even terms — with *more* and *superior* guns, tanks, trucks, armored cars, airplanes and warships — in which untold millions of Timken Bearings are used—coming off the production lines all the time. The Timken Roller Bearing Company, Canton, Ohio.
TIMKEN
TAPERED ROLLER BEARINGS

RIDGID

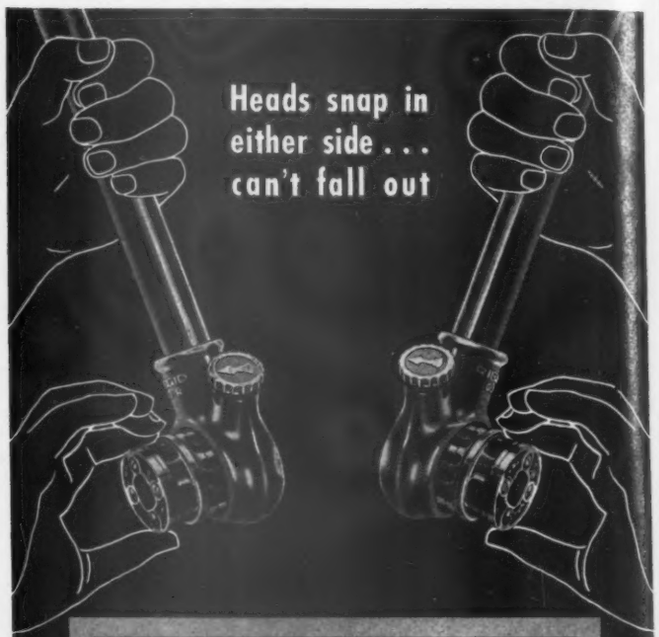
guarantees you *more* pipe wrench at *less* expense....



THERE'S no beating around the bush about that guarantee. That means you'll never have housing trouble or expense. Other things you'll like are the adjusting nut that won't bind, that always spins easily to size, whether 6" or 60" wrench; safe comfort-grip I-beam handle; handy pipe scale on the hookjaw; and the no-slip no-lock jaws. Ask your Supply House for the more-service less-upkeep RIDGID.



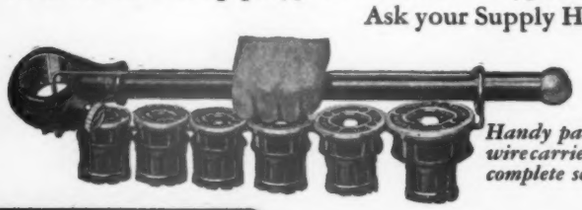
End pattern for pipe in coils or against flat surfaces, 6" to 36"



Unusually Handy

This work-saver RIDGID 00R Threader

THIS popular-priced little RIDGID Ratchet Threader for pipe ⅛" to 1" offers you unusual features that save time and work. Heads snap in from either side, lock with the ratchet knob. You don't need special dies for close-to-wall threading—just reverse the accurately ground tool-steel dies in the head, which are easily removed for regrinding also. Conduit dies available. No. 00R for pipe ⅛" to 1", No. 111R ⅛" to 1¼". Ask your Supply House.



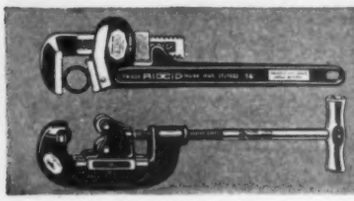
Handy patented wire carrier with complete sets.

Buy RIDGID Pipe Tools at Supply Houses Everywhere

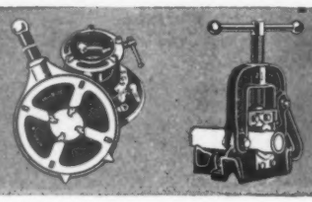
RIDGID

★ PIPE TOOLS ★

THE RIDGE TOOL COMPANY
ELYRIA, OHIO, U.S.A.



Fast-Working Tools for War... and the Busy Peace that's Coming



SHE SAILED in the last jumpy days of a brittle peace. She wallowed heavily through the ominous waters of Malacca Strait. She inched her throttle forward on the broad Indian Ocean. Her winches sighed sadly as they laid her precious cargo on American docks. The last few thousand tons of rubber had arrived from the great plantations of Malaya.

It may be years before she sails again from Singapore. What will America do for rubber until then? And will America *ever* return to a dangerous dependence on raw materials 15,000 miles away?

We're answering that question — in part — right here at Acushnet. We worked with natural rubber for thirty-two years, but when the Japs double-crossed us at Pearl Harbor we were ready for the switch to *synthetic rubber.* Now we are known as one of the leading processors of rubber or synthetic rubber into the products of war — products of great value in chemical warfare and in aviation. Gas mask parts, oxygen masks, oil-seal rings for airplane engines — such Acushnet products as these are in service wherever our boys are fighting.

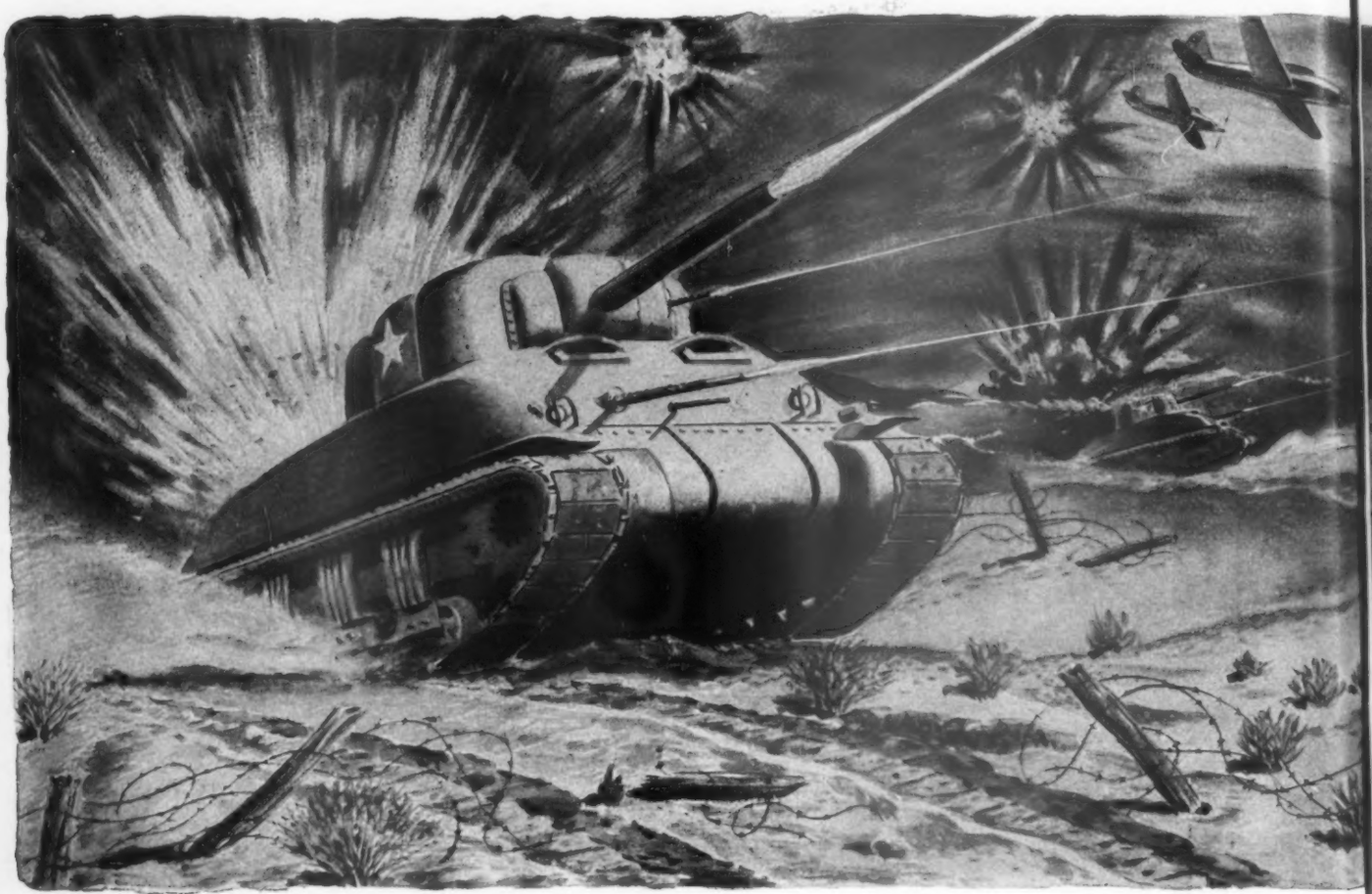
We used to make about the best golf ball you ever belted toward a green. Some day, we'll make that ball again . . . but the name ACUSHNET will not be confined to the fairways. It may appear in your home, in your office, on products which, come peace, will be among the best rubber products of their kind ever developed for your comfort and your convenience.

In rubber, remember the name —

ACUSHNET

ACUSHNET PROCESS COMPANY, NEW BEDFORD, MASSACHUSETTS • PROCESSORS OF PRECISION-MOLDED RUBBER GOODS

One day of battle IN TUNISIA OR RUSSIA



Let us help you motorize your new designs

As a result of today's battle experience, that weapon of war you are producing may call for new motors or generators, or ingenious new motor applications.

In meeting this urgent need, we of General Electric may be able to help you. And the sooner we know your requirements, the greater the chance of meeting them in time.

Right now, G.E. has in production scores of "fighting motors" specially engineered, or adapted, for war machines. It's likely that your requirements can be met by some type of motor now designed and in production. If not, additional production of certain types can be scheduled immediately, or in the very near future.

G.E. has more than 1700 design engineers and application specialists mobilized on motor problems. Among them are men familiar with the electrical requirements

Builder of TRI CLAD Motors • AMPLIDYNES AIRCRAFT POWER PACKAGES DYNAMOTORS GENERATORS EVERYTHING IN MOTORS

. . . shapes next morning's motor needs

of virtually everything that shoots, floats, or flies. By drawing on their experience, your individual needs may be more quickly met.

Every inquiry for "fighting motors" will get prompt and understanding consideration, whether or not we have the facilities available at the moment to serve your particular need. Just get in touch with your local G-E representative. *General Electric Co., Schenectady, New York.*

Typical G-E Fighting-motor Designs

AIRCRAFT "POWER PACKAGE"

Specially engineered to operate such devices as wing flaps, this single, self-contained unit combines motor, reduction gear, and clutch, and other operating elements. It is one of a large family of G-E power packages now in volume production.

MOTORS FOR NAVAL SERVICE

A high production rate is being maintained on motors to drive auxiliary pumps, hoists, and other equipment on naval vessels and cargo ships. G.E.'s familiarity with specifications for these services may help in applying motors to marine products.

DYNAMOTOR FOR TANKS AND AIRPLANES

To meet power demands of communications equipment, G.E. has developed a group of self-contained dynamotors ranging in output from 25 to 600 watts. Their specifications reflect battle experience as applied to tanks, aircraft, and other mobile field equipment.

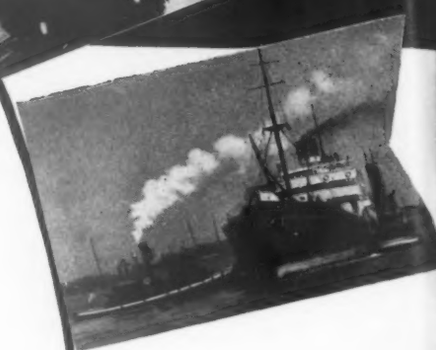
UNIT-BEARING MOTOR

For small cooling fans on radio equipment and dozens of other wartime jobs, this small motor is compact, quiet, and easy to install. Bearing and core are a single cast member, assuring permanent alignment. Sizes from 1.5 watts to 1/25 hp. Standard type shown here is easily adaptable to various mounting arrangements.

TOTALLY ENCLOSED "TRI-CLAD" MOTOR

For severe service, ½ to 2 hp. This standard totally enclosed motor may have application to your new fighting machines. It has a rotating-labyrinth bearing seal, and leads sealed in compound within the cast-iron frame. Mounting dimensions are interchangeable with those of open motors of like rating.

GENERAL ELECTRIC



SENDING A PACKAGE TO HITLER

★ ★ IT contains munitions, destined for the destruction of the German army, to be used by the Allies at the front. Countless thousands of packages, supplies for fighting troops on all fronts, must be transported across miles of American land, across an ocean, and then another trek to the actual combat zone. The carriers —railroads, boats, trucks, even planes—form the supply line half way around the globe. And each is dependent on rubber.

Railroads use rubber hose, belting and gaskets for rolling stock and all kinds of mechanical rubber products in maintenance shops. Ships require rubber products of all types, including fire hose, belts, valves and packing. Army trucks use tires and tubes, of course, hydraulic brake hose, rubber motor mounting, rubber for shock absorption, fan belts and radiator hose. . . . . .

Helping keep these supply lines efficient in operation is a responsibility of the rubber industry. Republic is especially proud of the many mechanical rubber products it furnishes for this wartime transportation system.

Accredited Distributor

• Your Republic Distributor has the knowledge and facilities to provide advantages of supply and service available in no other way on your needs for mechanical rubber and other equipment. Utilize his services fully. His display of the Republic Distributor Emblem is your assurance of his qualifications.

THROW YOUR SCRAP INTO THE FIGHT

WE ARE PARTICIPANTS IN THE OWNERSHIP AND OPERATION OF NATIONAL SYNTHETIC RUBBER CORPORATION

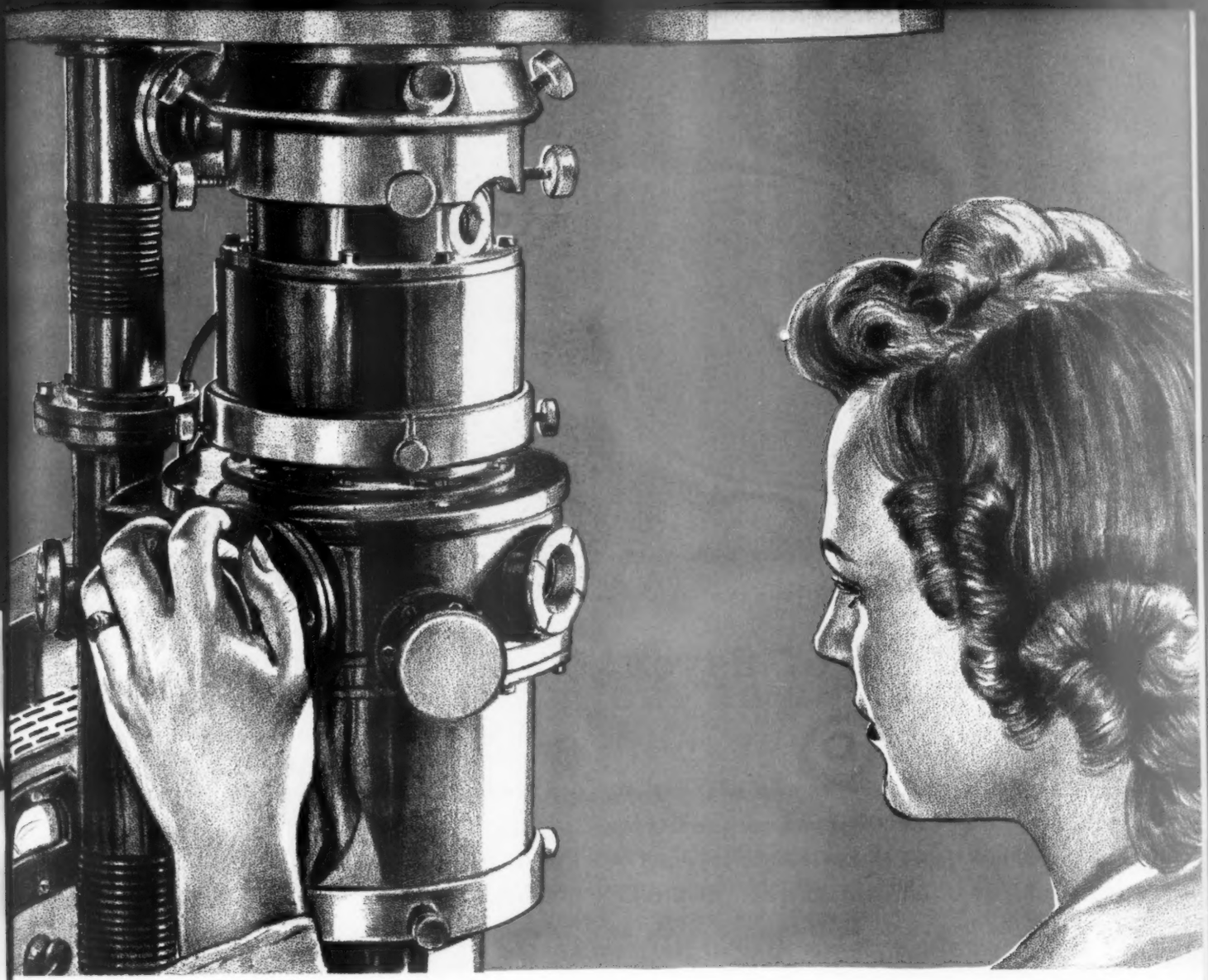
REPUBLIC RUBBER

YOUNGSTOWN • • • OHIO

HOSE • BELTING • MOLDED GOODS PACKING • EXTRUDED PRODUCTS

DIVISION OF

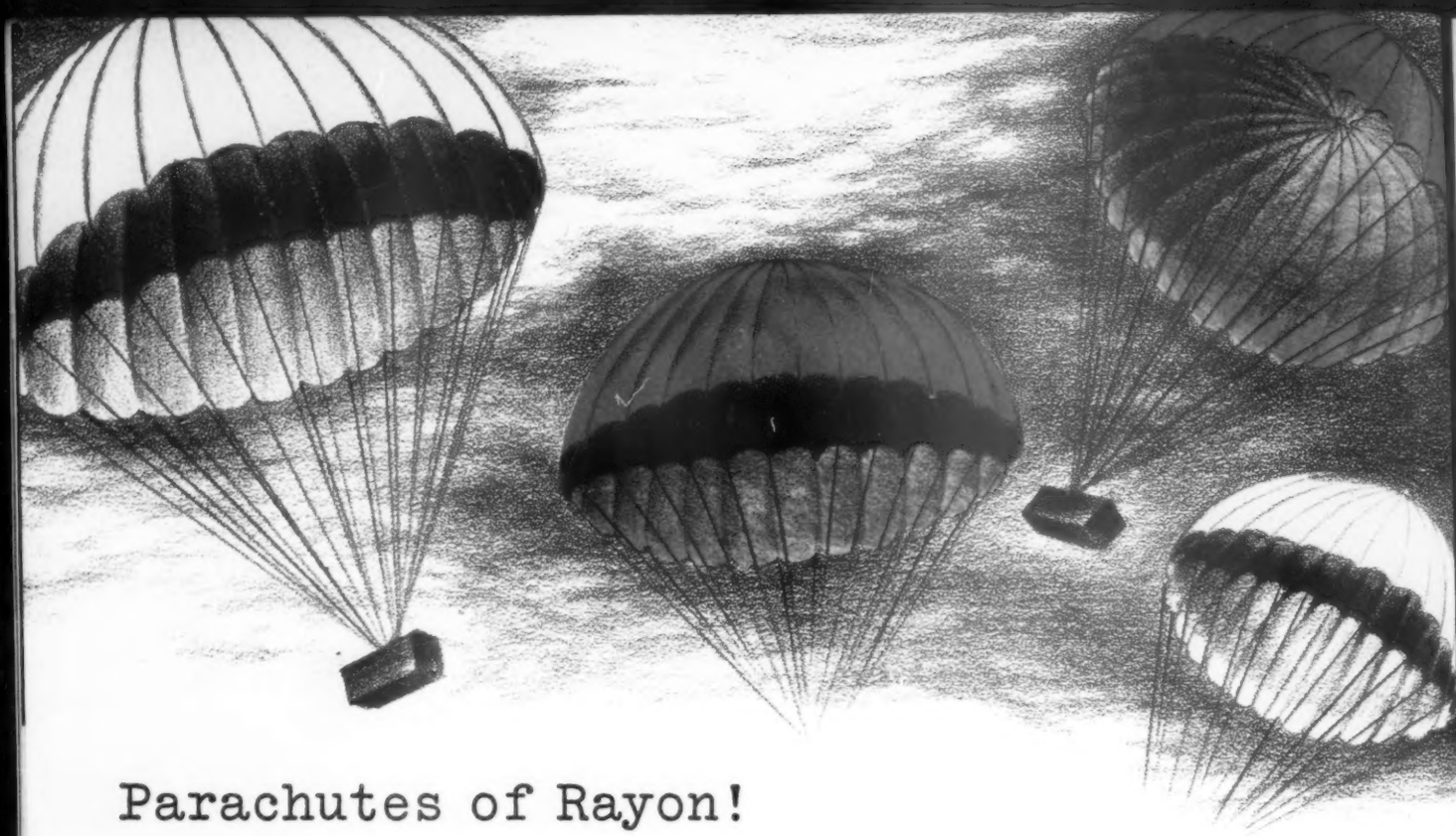
LEE RUBBER & TIRE CORPORATION



Chemical Riddle-Buster

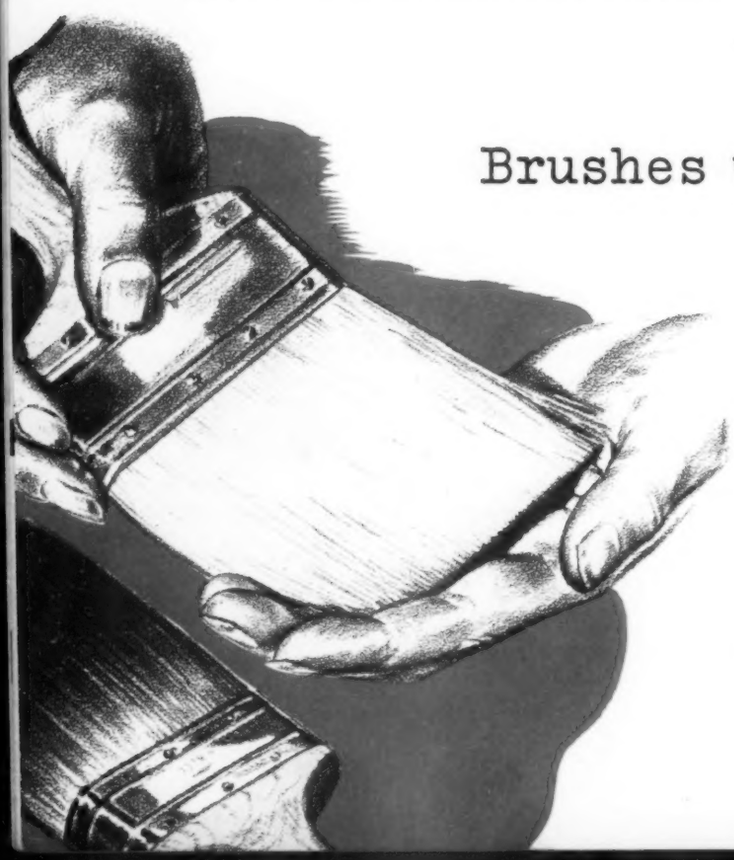
TODAY, this electron microscope at the Hercules Experiment Station is helping to broaden the horizons of chemical knowledge. With super-revealing power, it brings into sharp definition a completely new realm of chemical and physical phenomena.

This work, correlated with our many other research and development projects, is improving all of our products—rosins, resins, terpene solvents and chemicals, cellulose derivatives, paper-making chemicals, industrial explosives. May we share these improvements with you? For literature, information, and assistance on specific problems, write Hercules Powder Company, Wilmington, Delaware.



Parachutes of Rayon!

Aerial delivery parachutes, capable of transporting loads as heavy as 300 pounds, are now being made of a new-type, extra-strength rayon. The parachutes are of different colors . . . each color denoting the contents of the cargo, such as food, fuel, water, clothing, medicine, or other vital supplies. The finished rayon used in many of these parachutes is made from Hercules Chemical Cotton and has the unusual property of increasing its strength in direct proportion with the suddenness of the applied load. This unique property is invaluable, also, in the production of the Army's famous tires for combat vehicles and airplanes. Additional development work is now being conducted for other war uses. Further data are available on request.

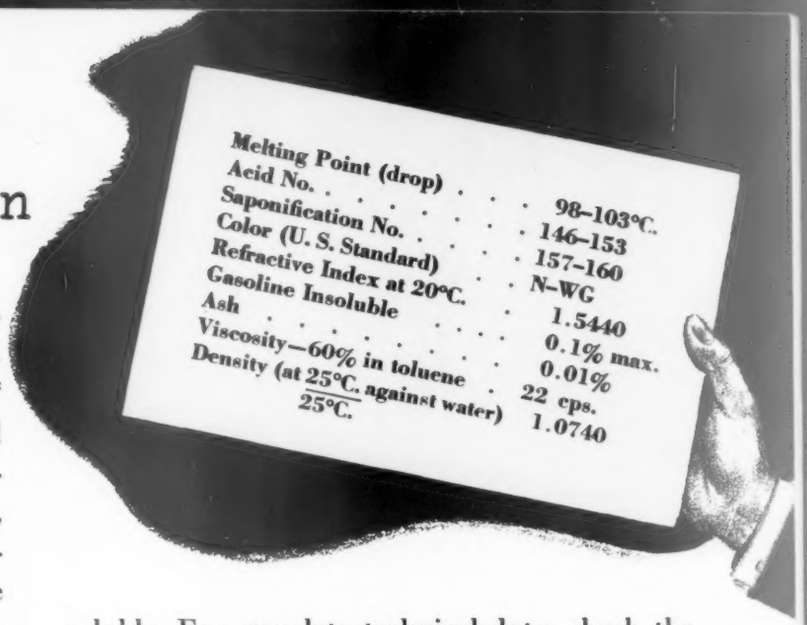


Brushes with Chemical Bristles

To replace the time-honored hog bristles in paint brushes, bristles of rayon threads coated with cellulose acetate are being used.

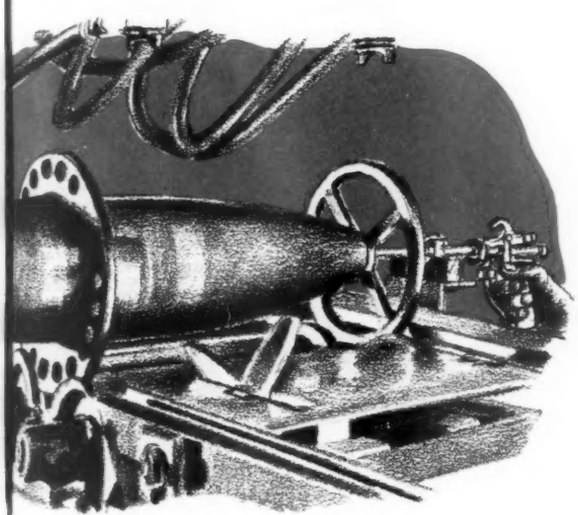
Resistance to oils, flexibility, and toughness are important virtues cellulose acetate offers to paint brush bristles. These features plus economy, lightweight, stability, clarity, and ease of fabrication may suggest that cellulose acetate is a material you should investigate now. Write to Cellulose Products Department, Hercules Powder Company, Wilmington, Delaware.

New things have happened with Rosin


Melting Point (drop) . . . . 98–103°C.
Acid No. 146–153
Saponification No. 157–160
Color (U. S. Standard) . . . . N–WG
Refractive Index at 20°C. . . . 1.5440
Gasoline Insoluble . . . . 0.1% max.
Ash 0.01%
Viscosity—60% in toluene . . . 22 cps.
Density (at 25°C. against water 25°C. . . . 1.0740

In the past year-and-a-half new rosin modifications have opened up many new applications. An outstanding example is Hercules Poly-pale* Resin. This polymerized rosin offers all the good qualities of natural rosin plus many extra advantages. It extends critical supplies of glycerin, phenol-aldehyde condensates, and maleic anhydride. It eliminates rosin's tendency to crystallize in solution. It has a 15° to 20° higher melting point than rosin. It is pale in color and is widely soluble. For complete technical data, check the coupon block numbered "1" on the next page.

Quality coating jobs in a hurry



Nitrocellulose lacquers have long been recognized as the fastest-drying finishes known. (Applications air-dry in from 5 to 10 minutes.) In addition, nitrocellulose lacquers provide one of the toughest finishes known—finishes incorporating flexibility, durability, and resistance to water and chemicals.

These features have made nitrocellulose lacquer the ideal coating for the inside surfaces of shells. The illustration shows the spraying mechanisms of this interesting application.

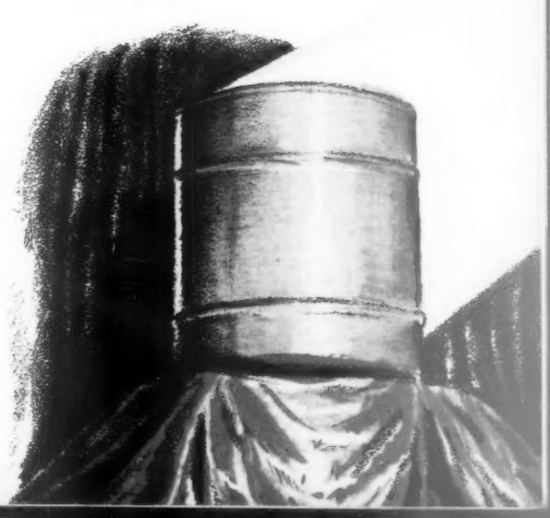
If you have a finishing problem on either wood or metal, we'll gladly send further technical information.

Scarce plasticizers replaced by HERCOLYN

With certain plasticizers under strict allocation, Hercolyn* takes on increasing importance for nitrocellulose lacquers. Hercolyn—the hydrogenated methyl ester of rosin—is a pale-colored, high-boiling liquid with exceptionally low vapor-pressure.

The lacquers produced have great brilliance, depth of gloss, hardness, water resistance, and satisfactory initial flexibility. Retained flexibility is sufficient for many interior applications. Elsewhere, less available plasticizers may often be extended with Hercolyn.

In resinous and asphaltic compositions, adhesives, and similar products, too, Hercolyn finds equally important applications. Write Synthetics Department, Hercules Powder Company.



*Reg. U. S. Pat. Off. by Hercules Powder Company

Timely Technical Information

CHECK THE COUPON BELOW

ROSIN IMPROVEMENT... 14 pages of data on Poly-pale* Resin—Hercules' polymerized rosin—which extends glycerin and scarce synthetics in varnishes and modified synthetic resins. (*Check No. 1 below.*)

CELLULOSE ACETATE . . . Just off press, lists properties and uses of cellulose acetate in plastics and lacquers. Charts, tables, formulation directions. (*Check No. 2 below.*)

STABLE ROSIN DERIVATIVE... Properties and uses of Staybelite*—Hercules' hydrogenated rosin—which combines color and clarity of Hercules Pale Wood Rosins with greatly increased resistance to oxidation and action of light. (*Check No. 3 below.*)

ASPHALT MODIFIERS... Effect of Abalyn*, Hercolyn*, and Belro* resins on blown asphalt softening points, penetration, fluidity, impact resistance, weathering, compatibility, blowing properties. *Check No. 4 below*, or for abbreviated form, *check No. 5.*

DOMESTIC DRYING OIL VARNISHES . . . Two booklets. *Check No. 6 below* for data on the drying properties of Pentalyn* resin varnishes. *Check No. 7* for information on maritime finishes.

STABILIZED CHLORINATED PARAFFIN . . . Fire-proofing ability, stability, and other properties of improved Hercules Chlorinated Paraffin are discussed in a new booklet. (*Check No. 8 below.*)

EXTRA-ACTION METAL CLEANERS... *Check No. 9 below* for book discussing the action of Dresinates*—a new group of wetting agents, emulsifiers, and detergents—in improving alkaline metal-cleaning compounds.

SOLUBLE OILS AND EMULSIONS . . . The use of Dresinates in cutting oils, furniture polishes, disinfectants, fat-liquoring compounds, asphalt emulsions, etc. are described. Formulation procedures are discussed. (*Check No. 10 below.*)

*Reg. U. S. Pat. Off. by Hercules Powder Company

HERCULES POWDER COMPANY
INCORPORATED
1922 Delaware Trust Building Wilmington, Del.

Please send me further information on:_____

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*Company*_____

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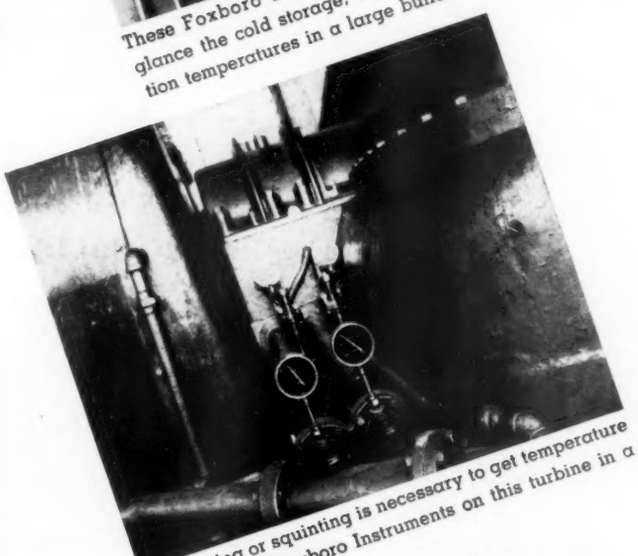
1	2
3	4
5	6
7	8
9	10

HERCULES

CELLULOSE PRODUCTS • ROSIN & TERPENE CHEMICALS • SYNTHETIC
CHEMICAL COTTON • EXPLOSIVES • PAPER MAKERS CHEMICALS

PRINTED IN U. S.

These Foxboro Temperature Indicators show at a glance the cold storage, water heating and refrigeration temperatures in a large building.



No stooping or squinting is necessary to get temperature readings with Foxboro Instruments on this turbine in a mid-west power plant.

They almost SHOUT the temperature!

Important temperatures practically *can't* be *overlooked*, with Foxboro Temperature Indicators on the "hot spots" of your processes or equipment. These sturdy instruments bring the readings right before your eyes . . . prevent spoilage of precious materials, and safeguard vital equipment!

Foxboro Temperature Indicators can be located in any convenient place up to 200 feet from the bulb. And the clear-cut figures on their airplane-type dials give instant, accurate readings 20 feet away.

Yet easy visibility isn't the only advantage of these accurate instruments. At no higher purchase price, Foxboro Temperature Indicators provide all-metal construction that insures life-time service without maintenance. Write for detailed Bulletin 148-6. **The Foxboro Company, 178 Neponset Ave., Foxboro, Mass., U. S. A.** Branches in principal cities of United States and Canada.

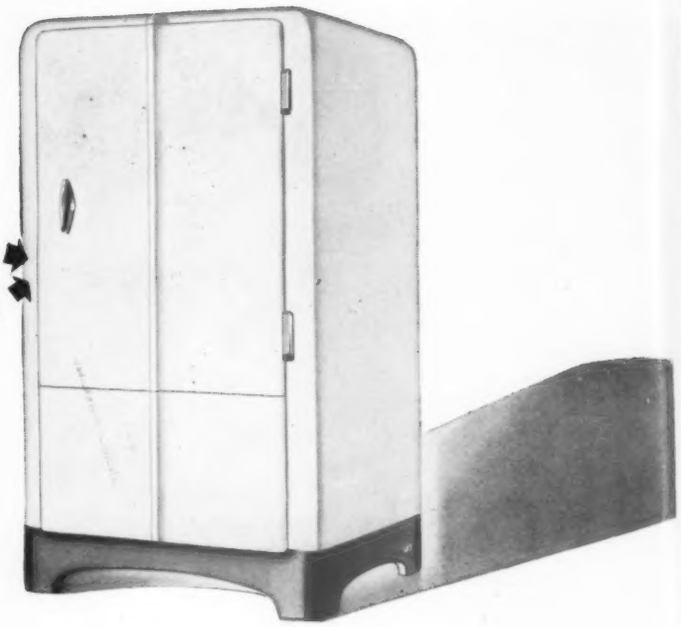
ARMY E NAVY

TEMPERATURE INDICATORS BY FOXBORO

Reg. U. S. Pat. Off.

WHY OPEN WIDE TO SEE INSIDE ?

WHY? WHY? WHY? WHY? WHY?



WHAT'S SO SECRET ABOUT A REFRIGERATOR?

Does a refrigerator *have to be* a hideaway?

Think how much more convenient it would be if one could see inside without opening the door. See what food is on hand . . . where it is stored. Figure also how much more efficiently and economically it would operate if a housewife could do her inside looking without wasting refrigeration.

All right. Why not make it that way? Why not open it up with glass? The door. The shelves. The partitions around the special storage compartments. Add to the convenience of the modern refrigerator the utility of clear vision.

Research has fitted glass for this and many other practical uses. To its unequaled and lasting transparency, glass now boasts many amazing qualities that fit it for jobs never dreamed of before.

Did you know? Glass can be made stronger today than many metals. It is one of the most chemically stable of all materials. More dimensionally stable, too. Its surface is among the hardest in the world. Nonporous. Acid-resisting. Unusually resistant to abrasion. Its weathering qualities are unequaled. You can obtain it in polished flat sheets or bent shapes; laminated or fabricated with another material. And you can have it in the most efficient multiple insulating units.

Just remember, when you design or redesign anything for the home, for industry, or for any structure today, there's a material that you can see through, that lets light through, that's strong and long-lasting. It's glass. Libbey·Owens·Ford glass, of course.

Perhaps glass fits your product or plant. Won't you write us about any use that interests you? That's the way to really find out. Libbey·Owens·Ford Glass Company, 1773 Nicholas Building, Toledo, Ohio.

Destructible ?

Wood-Metal-Plastics-Glass. No material is indestructible. However, barring unseen conditions, no material will fail on a job in which it has been properly specified and engineered. When our application engineers say "Yes", you can be sure about glass.

L O F

LIBBEY·OWENS·FORD

A GREAT NAME IN *Glass*

After the War . . .

the Kollsman Instrument Division of Square D Company, Makers of Aircraft Instruments . . .

will be glad to fix up your fliver, convertible, two-seater plane with the latest in air speed indicators. You may not know a Pitot Static Tube from a speedometer cable, but we'll warrant, that after the war, you will know more about the former. Right now Kollsman Instruments are helping to "keep them flying". Naturally, after the war you will get first choice in all the things they've learned in war production.

Another thing that's coming out of this war is better shipping—safer shipping and whether it is Pitot Static or speedometer cables, you'll find the Mason MailMaster the prefabricated answer to small parts delivery. Its easy labelling, its structural strength, its easy closure and its safety of delivery will mean less over-head in the shipping department.

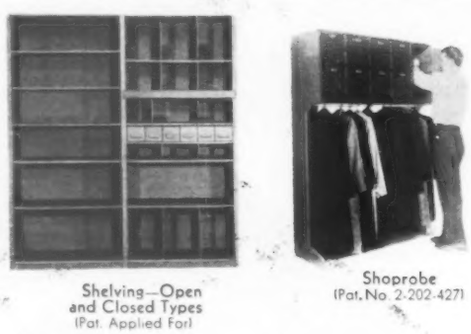
THE MASON BOX CO.
ATTLEBORO FALLS, MASS.
175 5TH AVE.
NEW YORK

(and Sadie)

WHEN JOHNNY COMES MARCHING

TO WORK

Engineered in Wood for the Duration



LYON
PRODUCTION EQUIPMENT
HELPS 'EM GET MORE DONE!

● Results in war plants throughout America prove that Lyon Production Equipment and Lyon Storage Equipment can contribute a lot in the battle of production.

They help get more man-hours out of present floor space, workers and machines by speeding up handling of tools and parts . . . by providing the protection and efficient working conditions the workers need for top efficiency . . . by reducing accident hazards, loss of and damage to vital products and tools.

LYON METAL PRODUCTS, INCORPORATED

General Offices: 3307 Madison Avenue, Aurora, Illinois

Branches and Distributors in All Principal Cities

LYON METAL PRODUCTS, INCORPORATED

Write on business letterhead for latest Lyon Catalogs.

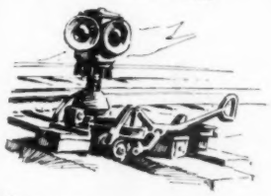
PARTS FOR—AIRCRAFT

Tail wheel assemblies, actuating cylinders and engine forgings. Brake lining. Camshaft and starter bearings.

PARTS FOR—BATTLE

Shell and shot forgings. Cast bomb parts. Steel armor plate castings. Ammunition hoists. Torpedo parts.

PARTS FOR—TRACKWORK



Crossings, switch stands, switch point locks, guard rails, rail lubricators. Trackwork for industrial equipment.

You Name the Part—

PROBABLY WE MAKE IT

Brake Shoe **MAKES PARTS** for original equipment and for maintenance; parts that are upset and drop forged; molded fabrics and plastics; ferrous and non-ferrous castings. In war, as in peace, Brake Shoe ships millions of parts to thousands of manufacturers, in many fields of industry.

The services of our research and development engineers are available for immediate or post-war problems.

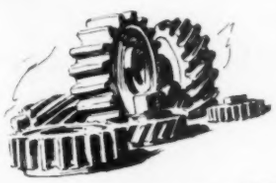
AMERICAN BRAKE SHOE COMPANY, 230 PARK AVENUE, NEW YORK, N. Y.

AMERICAN
Brake Shoe
COMPANY

58 PLANTS SERVING INDUSTRY AND TRANSPORTATION

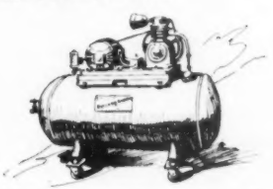
American Brakeblok Division	*Detroit, Mich.*
Ramapo Ajax Division	*New York City*
American Manganese Steel Division	*Chicago Heights, Ill.*
Brake Shoe and Castings Division	*New York City*
Kellogg Division	*Rochester, N. Y.*
American Forge Division	*Chicago, Ill.*
Southern Wheel Division	*New York City*
National Bearing Metals Corp.	*St. Louis, Mo.*

PARTS FOR—MANUFACTURERS



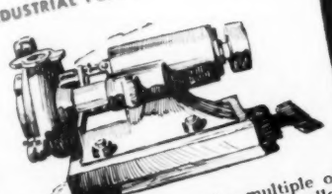
Manganese steel chain, gears, sheaves, sprockets and wheels. Hard surfacing welding rods. Forgings, castings.

PARTS FOR—GARAGES



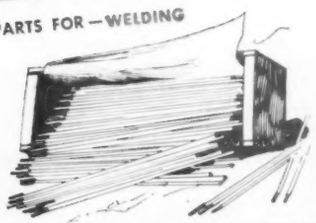
Air compressors. Car washers. Brake lining, fan belts, clutch facing, radiator hose, auto lifts.

INDUSTRIAL PUMPS



Complete assemblies for multiple or two van closed or open impeller type. Single stage self-priming pumps.

PARTS FOR—WELDING



Welding rods, flux, nickel-manganese filler, applicator bars. Welding products for repair of ferrous equipment.

PARTS FOR—SHIPS

Strut and stern tube bearings. Carbon steel castings for davits and winches. Bronze castings for engines.

"Hold it! . . . that bolt is murder!"

A BROKEN CHAIN, repaired with a bolt, is a constant threat to men, materials and equipment. It might crash the load and far worse, it *might* crush nearby workers.

We build chain to carry heavy loads and to withstand considerable abuse. But in these hectic days, with heavy pressure on output, even careful, conscientious workers sometimes take chances. They feel that dangerous short cuts are excusable, now and then, to get the job out on time.

To prevent ignorant, heedless or reckless handling of chain, we recommend following the National Safety Council's Safe Practice Pamphlets, a few suggestions from which appear at the left.

National Safety Council Offers these Suggestions on Chain Safety

1. Don't overload a chain. Know the safe capacity of the chain you use.
2. A wide angle between legs of a chain sling increases the strain. Never overlook this when figuring sling capacity.
3. Don't strain a chain by knotting, kinking, crossing or by jolting starts and stops.
4. Be sure that chains are regularly inspected and records kept. Don't use one which has stretched or shows defects such as cracks or wear in links.
5. Never bolt chain links together, regardless of the purpose.

American Welded and Weldless Chains are among the many products we build for Industry, Transportation, and Agriculture, essential in peace, vital in war.

•

The American Chain & Cable Company is happy to cooperate with the National Safety Council in its nation-wide campaign to "Save Manpower for Warpower"—which is now being conducted at the request of President Roosevelt.

ACCO TRADE MARK

In Business for Your Safety

AMERICAN CHAIN & CABLE COMPANY, Inc.

BRIDGEPORT, CONNECTICUT In Canada—Dominion Chain Company, Ltd. • In England—The Parsons Chain Company, Ltd., and British Wire Products, Ltd.

Aircraft Controls, American Chain, American Cable Wire Rope, Campbell Cutting Machines, Ford Chain Blocks, Hazard Wire Rope, Manley Garage Equipment, Owen Springs, Page Fence and Welding Wire, Reading Castings, Reading-Pratt & Cady Valves, Wright Hoists and Cranes

ARE YOU HOARDING IDEAS?

Are you storing away in the back of your head—in safe or desk drawer—the plan for a mechanical or electrical device that you mean to bring out *after the war*? Wars always end more abruptly than they begin. How long would it take you, if the war should end next month, next year, or even two years hence, to get that product into distribution? Bring your product to us NOW! While General Instrument is at present engaged 100% in war effort, our plants and personnel are geared for the development and volume output of precision products—all set to swing into civilian service the moment the Axis runs up the white flag.

At a time when a global struggle for freedom was not even dreamed of, General Instrument was engaged in wide-scale development of peace time products like this for peace time use.

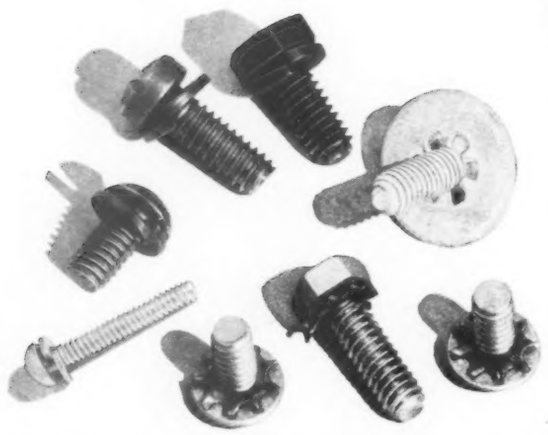
GENERAL INSTRUMENT CORPORATION

829 NEWARK AVENUE, ELIZABETH, N.J.

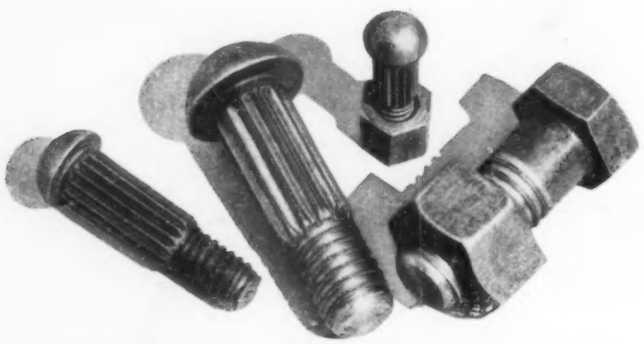
With this group of a

YOU CAN GREATLY SPEED UP

The new Lamson Lock Nut keeps assemblies tight which are subject to severe vibration or shock. Locking crown section, eliptical in shape after heat treatment, grips bolt thread like a vise. One-piece design, can be used repeatedly. Widely used in Ordnance and Naval applications. U. S. Patent No. 2255286.



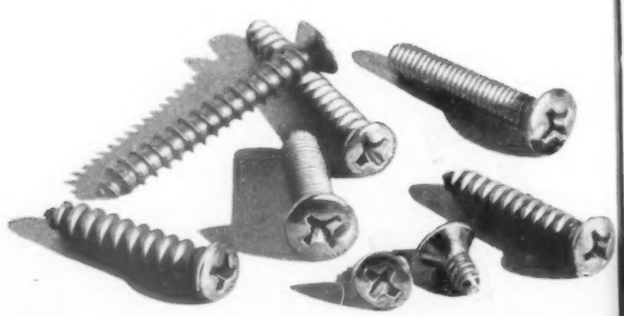
Lamson Fastener Units are available in 8-32 to 5/16" diameters, and in lengths up to 1½". All standard head styles. Shakeproof or helical spring washer types optional. Prevents lost washers, keeps inventory of screws and washers identical, and can be used in automatic hopper feed drivers.



Dardelet Self-Locking Screw Threads may be applied to any type of bolt. Dardelet bolts are unaffected by vibration, loss of initial bolt tension or wear. They have higher tensile and impact strength, and greater endurance limit than standard threads.

The Weather-tight bolt is for wood construction. Head of this bolt sets flush with surface of wood without counter-boring. Prevents moisture seepage beneath head and from nut end as well. Tapered splined shanks prevent turning when nut is applied. U. S. Patent No. 2056688.

Lamson Hardened Sheet Metal and Self-Tapping screws are made in three standard types for metal and plastic assemblies. Types "A", "C" and "Z" are available with conventional slot or Phillips' Recessed Head.



Phillips' Recessed Head screws are made in all sizes with both standard machine screw threads and hardened self-tapping screw threads. Hand or power driven screw drivers do not slip out of recessed head.

ofastenings for assemblies

EUP YOUR PRODUCTION

● Here are six *standard* Lamson products, each one of which is certain to speed up your assemblies. Each one has definite advantages, but all have one characteristic in common—*they speed up assemblies.* And right now, during this war, speed in assembly is an imperative requirement.

Since these are all *standard* products—they are *made from existing tools and dies in our shops.* All of them are made of carbon steel, heat treated to obtain proper physicals. Whether you use ten hundred or ten million of any one of them, there will be no measurable variation in their quality, their strength or their fit.

Now if you design your product to use these *standard* fastenings instead of a "special" made to specifications, you will enjoy some immediate advantages that no "special" can give you. For instance, you can have a choice from among many *standard* sizes. You can actually get them "out of stock"—and probably from more than one source of supply. (A "special" means not only making up special tools and dies, but means special handling right on through our plants at every stage of manufacture, inspection and shipment. And that wastes time that you may need.)

So, design to use one or more of these standard products if you can.

Remember that each one of these products has some *special advantage, some special feature* that aids you in *speeding up your assemblies.* Take Lamson Lock Nuts for example. They are not only a positive nut lock, but they may be used over and over again without impairment of their locking action. Or take Lamson Weather-tight Bolts, and compare their advantages with ordinary Carriage Bolts. These new bolts make "*weather-tight*" assemblies, *better looking* assemblies, and *safer* assemblies. You do not need to counter-bore to make them fit flush with a surface, thus eliminating one operation and speeding up your assembly. Hence they cost less to use.

Besides the two Lamson specialties we mention, there are shown here Lamson Dardelet bolts and Dardelet "Rivet-Bolts"; Phillips Recessed Head (as well as slotted head) sheet metal screws; and, of course, Lamson Fastener Units assembled with various types of lock washers.

With all these efficient types and kinds of *standard* fastenings to select from—you have a natural "priority" on deliveries.

Samples in the size you need of any of these Lamson *standard* products can be sent you, *and quickly,* for any tests you care to make. And if you can use them in your war production, you can be assured that you can get what you need much more promptly than if we have to make up a "special" type, size and kind of fastening for you.

We will gladly send you special literature describing these various Lamson *standard* products on request. Just ask for bulletin describing one or more of them.

THE LAMSON & SESSIONS COMPANY, 1971 W. 85th St., Cleveland, O.

These four books will help you in specifying and buying "standard" bolts, nuts and "specials"

THE LAMSON BLUE BOOK—is our complete Catalog of standard products excepting our Aircraft products.

"BOLTS, NUTS & SCREWS"—70 pages of technical and practical information. First copy gratis, requested on your letterhead. Additional copies one dollar each.

"BOLT, NUT & RIVET STANDARD"—175-page book published by the American Bolt, Nut & Rivet Manufacturers Association, 1550 Hanna Bldg., Cleveland, O. Price one dollar per copy. (Order from publishers, please.)

"SIMPLIFIED STOCK LIST"—of bolts, nuts and screws, conforming to latest revisions of the Office of Price Administration, and of great value in showing you in what ratio quantities of various standard products are kept in stock for deliveries, by your jobbers and in our own (and other bolt manufacturers') warehouse stocks.

*Buy U. S. War Bonds and Stamps—**an investment in America***

LAMSON & SESSIONS

BOLTS · · NUTS · · COTTERS · · CAP SCREWS · · SPECIALS

Your Jobber Stocks the Lamson Line

HOW TO SAVE CRITICAL ALLOYS BY THE TON!

How do you intend to fabricate that steel you've ordered? Your answer may conserve tons of critical alloys...save you trouble in the bargain. This recent Frasse case history will testify:

The contractor had just ordered 2½ tons of high sulphur, free-machining stainless bars. Frasse, following its usual practice, made a routine check on the end use. Working on subcontract, purchasor was unable to give details–added that machineability was his only concern.

Frasse insisted. Purchasor contacted his prime contractor... learned that the steel was used for aircraft cable terminals. Familiar with this application, Frasse knew the parts would be swedged—warned that high sulphur stainless would crack in the operation.

Instead, Frasse recommended selenium free-machining, rather than a high sulphur stainless. The suggestion was accepted—with this subsequent comment by the customer: "Frasse foresight and knowledge saved us from machining critical alloys which would have been a total loss."

Here is conservation by the ton. Why not keep your steel source fully informed on your fabricating operations? Combined with his steel "know how", your data will eliminate expensive rejects...conserve critical material...help America do the job. *Peter A. Frasse and Co., Inc., Grand Street at Sixth Avenue, New York, N. Y. (Walker 5-2200) • 3911 Wissahickon Avenue, Philadelphia, Pa. (Radcliff 7100-Park 5541) • 50 Exchange Street, Buffalo, N. Y. (Washington 2000) • Jersey City, New Jersey Hartford, Connecticut • Rochester, N.Y • Syracuse, N. Y.*

Frasse

Mechanical and Aircraft STEELS

Seamless Mechanical and Aircraft Tubing • Aircraft Steels Cold Rolled Strip and Sheets • Welded Steel Tubing • Stainless Steels and Tubing • Drill Rod • Cold Finished Bars • Alloy Steels

that's carbon dioxide— POWERHOUSE IN A PACKAGE

HERE's energy that can be packed in a handy cylinder, carried to the battle fronts, stored indefinitely in a factory. Wherever, whenever it's needed it's instantly available at the turn of a valve. It can be utilized in a sudden burst or over a long period of time.

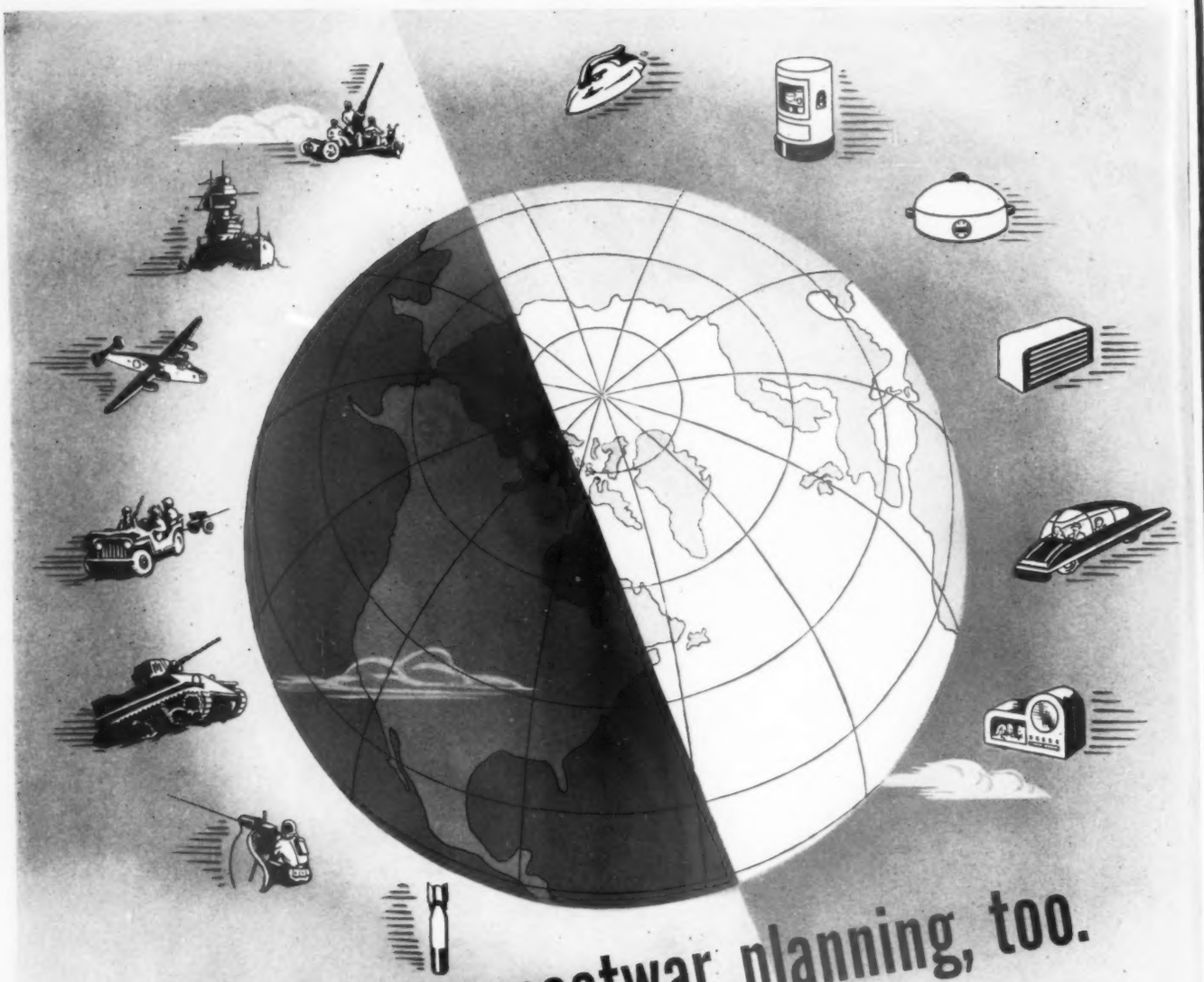
Carbon dioxide is the most compressible of all industrial gases. When stored under 850 pounds pressure at 70° F, there are 30,000 foot pounds of energy packed in every pound. That means that a Kidde container, with a carbon dioxide capacity of *only 1.4 pounds*, stores 42,000 foot pounds of energy—a real "powerhouse in a package!"

Walter Kidde & Company has found applications for this power actuation principle in many industries. Perhaps *you* have a job that can be done better with carbon dioxide. Let our Research and Development department work with you to help solve your problem. Just drop a line to Walter Kidde & Company, Inc., 746 Main St., Belleville, N. J.

PROTECTS LIVES

Kidde

HIGH PRESSURE GASES • FIRE PROTECTION



We are doing postwar planning, too.

● There is a lot of discussion of postwar planning, most of it pretty indefinite, necessarily.

We are doing postwar planning of a kind with some degree of certainty. We don't profess to forecast the shape of things to come, or just who is going to make what.

What we are certain of is that manufacturers of the thousands of articles to which plastics are adapted, are going to continue to appreciate the service that has made General Industries a dependable source of supply in molded plastics throughout years gone by.

Consequently, we are planning to maintain our high standards in producing molded plastics parts in any quantity, finely finished, accurate in dimension and conformation, and delivered "On Time."

General Industries
MOLDED PLASTICS

THE GENERAL INDUSTRIES CO.
Molded Plastics Division · Elyria, Ohio

Chicago: Phone Central 8431 New York: Phone Longacre 5-4107
Detroit: Phone Madison 2146 Milwaukee: Phone Daly 4057
Philadelphia: Phone Camden 2215

Correct Lubrication...

is your wire rope's BEST FRIEND!

If wire ropes are to give their best service—yes, even longer-wearing **HAZARD LAY-SET PREFORMED**—they must be lubricated regularly—and correctly. Not only will proper lubrication protect the many wires from corrosion and excessive wear, but will permit the internal wires which move one against another when the rope passes over a sheave or winds on a drum, to slide more freely and with less friction. For some short-lived services, factory lubrication is sufficient. For others, additional lubricant must be added in the field, and unless this is done with sufficient frequency, your wire rope is doomed to fail before its proper time. And this is no time to waste steel.

HAZARD LAY-SET PREFORMED WIRE ROPE ordinarily gives so much better, easier-handling, longer service than ordinary non-preformed rope that occasionally operators take its exceptional qualities for granted and forget the oil can. Don't do it. Lubricate your **LAY-SET** correctly, and you will get even *longer* service—even *greater* dollar value. All Hazard ropes identified by the Green Strand are made of Improved Plow Steel.

HAZARD WIRE ROPE DIVISION Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Fort Worth, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Tacoma
AMERICAN CHAIN & CABLE COMPANY, INC. Bridgeport · Connecticut

IMPORTANT SUGGESTIONS

Clean wire rope thoroughly before lubricating. Use kerosene and wire brush.

Passing the rope through high-pressure jetted steam has proved a very effective means of cleaning, especially larger diameters.

Wipe off excess lubricant.

Frequent lubrication with light-bodied lubricant is better than infrequent treatment with heavier lubricants.

Lubrication of any wire rope is sufficiently important to warrant calling in one of the industrial lubrication men employed by oil companies or a Hazard man. These men can tell you which lubricant will handle your problems best.

HAZARD LAY-SET *Preformed* WIRE ROPE

This is the DAY we are looking forward to

EVERYONE IN AMERICA is looking forward to Victory Day. That day when the last enemies of Democracy will be defeated. When it comes, and come it shall, this Company can again turn its efforts—now devoted 100% to the production of war materials—towards the manufacture of peacetime products.

No one knows when victory day will come, but between now and then we are prepared to talk over with you our facilities for the production of welded fabricated products of any type of material from a mild carbon steel to the highest alloy, either whole or partially heat treated. Our engineering experience has included in the past, special emphasis on hoops, bands and rings, resistance electric welding and handling of seamless tubing. We have perfected a system of eliminating wall variations and eccentricities in rings, bands or hoops.

If you, too, are considering post-war problems that come within the manufacturing scope given above, we would be glad to talk to you now, so that together we may lay plans for the future.

the Cleveland
WELDING COMPANY
WEST 117th STREET at BEREA ROAD • CLEVELAND, OHIO

Opening a portable carbon dioxide fire extinguisher valve used to be a rather slow operation. First the portable was set down; the valve hand-wheel was turned to the open position, the portable then picked up and the gas directed at the fire. Now, C-O-TWO has changed all that.

NEW SQUEEZ-GRIP SAVES GAS AND TIME

No need to set the extinguisher down to open a C-O-TWO Squeez-Grip valve; even while carrying the cylinder the valve is easily opened or closed. Nothing to do but squeeze the control lever, over the carrying handle. The valve is opened just as fast as you can close your hand. Fire is out in split seconds—there will be no damage to materials or equipment. Now more than ever, C-O-TWO is Safer because it's Faster.

C-O-TWO is a registered trademark and corporate name of this company. C-O-TWO is inspected and labeled by the Underwriters' Laboratories; approved by Factory Mutuals and the Bureau of Marine Inspection and Navigation. To be safe specify C-O-TWO.

C-O-TWO FIRE EQUIPMENT COMPANY

NEWARK, NEW JERSEY

Sales and Service in the Principal Cities of United States and Canada

"SEE-ABILITY" helps

Off the line—ahead of time! "See-ability" through modern lighting saves time in assembly, inspection, and final test.

build motors faster

Motors are coming off the lines, faster and faster . . . each a promise of Victory—ahead of schedule. • To insure the success of this vital war work, millions of Westinghouse Mazda lamps are needed daily—needed to provide better "See-ability" for all our workmen in foundries, machine shops, in production and inspection departments everywhere! To make these lamps available, we must draw upon limited supplies of nickel, copper, tungsten. • That's why it is necessary to ask all users to conserve their lamps, to help stretch further the nation's supply of critical materials. Westinghouse Electric & Manufacturing Co., Lamp Division, Bloomfield, N. J.

CONSERVE..Use lamps where "See-ability" counts most

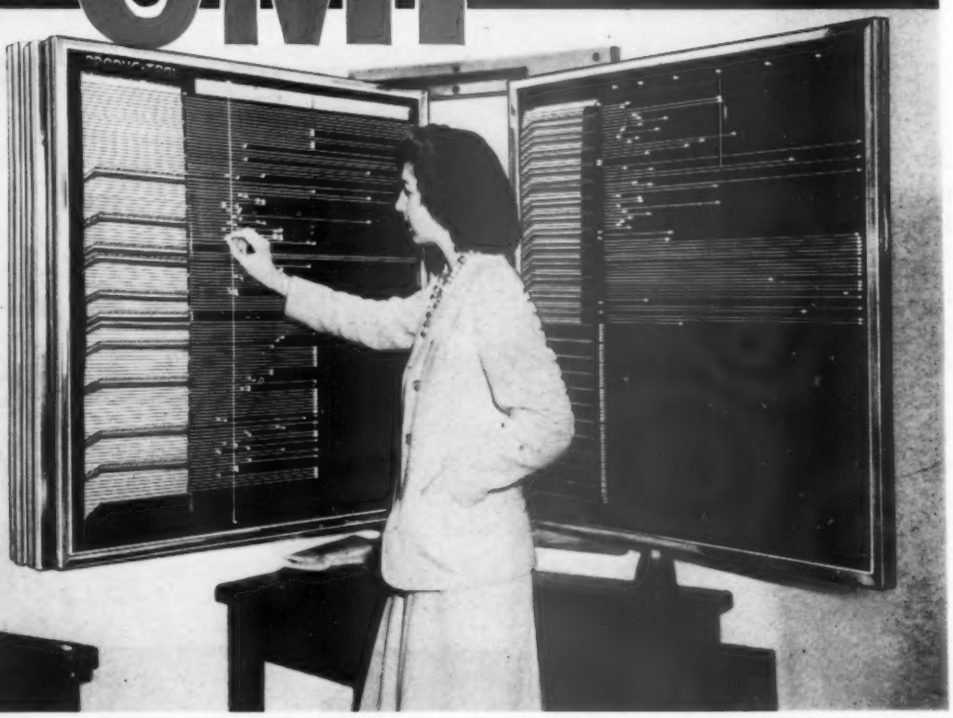
Be sure you get the most out of every lamp you own . . . (1) keep lamps and fixtures clean; (2) properly position all lighting; (3) check your entire lighting system. Your local power company will be glad to help you. For additional suggestions see the new 32-page booklet, "*Sight for Victory*" prepared by the National Better Light—Better Sight Bureau. Write Westinghouse for your copy today or ask lighting representative.

Westinghouse

MAZDA LAMPS

FOR GREATER "SEE-ABILITY"

CONTROL YOUR CMP OPERATIONS WITH ONE EMPLOYEE



BATTERY OF PRODUC-TROL BOARDS AT VARD, INC., PASADENA, CAL.

PRODUC-TROL THE PRODUCTION CONTROL BOARD WITH VISIBLE INDEX ATTACHED . . .

SHOWS YOU INSTANTLY

- What minimum and maximum balance of material to maintain and what to do about it.
- How to continually regulate your inventory.
- What allowances are made for quarterly regulations.
- How to easily maintain your balance during the quarter on:

ALLOCATION—60 DAY MAXIMUM—VENDOR ORDERS

- Saves Man Power.
- Expedites material.
- Puts all the facts in front of your eyes every minute of the day.
- PRODUC-TROL is simple, can be handled by any clerk.

PRODUC-TROL tells you INSTANTLY what operation is behind schedule in...

- Production Scheduling • Contracting
- Machine Loading • Material Control
- Sub-Contract Control • Purchasing
- Individual Order Scheduling • Expediting
- Control of Parts into Assemblies
- Parts Production in Lots by Operation

Send for complete details on PRODUC-TROL applied to CMP—Controlled Materials Plan—and how it can be handled by one clerk.

MAIL THIS COUPON TODAY →

- PRODUC-TROL speeds production in over 1100 War Plants.
- What PRODUC-TROL is doing for others it can do for you.
- A line on your letterhead brings "SPOTLIGHT", illustrating the complete PRODUC-TROL line.

If "information" cannot give you the telephone number of PRODUC-TROL in your city, phone, wire or write—

WASSELL ORGANIZATION

WESTPORT, CONN.

PHONE: WESTPORT 2-4743

In Canada: Seeley Systems Corp., Ltd., Toronto and Montreal

Please send details on PRODUC-TROL applied to CMP.

Name.....

Address.....

City.....

State.....

PURCHASING PREVIEWS

From the Washington office of

PURCHASING

National Press Building
Washington, D. C.

July 1, 1943

For Purchasing Executives:

OFFICE OF WAR MOBILIZATION will function as a War Cabinet to establish policy for the various Government agencies and departments which have been floundering around, due to duplication of effort and divided authority.

The new top agency repeats the favorite "layering" technique employed by President Roosevelt in building up the Governmental war administrative body. Through the course of the war crisis, the President has made many delegations of both the specific authority granted him by Congress in the first and second War Power Acts, and in the greater and less limited powers which accrue to the Chief Executive during a time of war.

When this dispersal of power created confusion and maladministration, a new executive layer was established to bring the situation in hand. The OWM is intended to be the last of such "holding companies" of Governmental power. Its function will be policy-making - - - not administrative.

James F. Byrnes, as Director of the Office of War Mobilization, will in fact function as Assistant President. The war agencies will continue in the various fields in which they have been operating. Transportation will continue to be regulated through the Office of Defense Transportation; the authority of the War Production Board over production problems has not been lessened; the War Food Administration will continue in the food field. Price control will continue, and if the present OPA agency cannot establish a firm and hard price control, control over those products which it has failed to bring under effective regulation will be shifted to other agencies.

Determination as to what departments are not doing the job will be made by the Director of the Office of War Mobilization, whose actions will dictated by several factors - - - not the least of which will be the political considerations involved.

* * *

WAR PRODUCTION IS NOT LEVELLING OFF. To the contrary, dollar volume of finished war goods will not reach its peak for 1943 until the month of December, and deliveries scheduled for the first months of 1944 exceed the December, 1943 peak levels.

Cutbacks in tank production and machine tools orders created the rumor that the war production program was tapering off. Facts are that there have been drastic cuts in both programs. In the case of tank manufacture, manufacturers who converted from locomotive production to tank manufacture are back on locomotives, with plenty to keep them busy. Manufacturers of farm machinery who went over to tank output, are back on agricultural machinery. Specially built plants have been switched over to airplane forgings. The impact of cutbacks has been more pronounced on sub-contractors, but here again WPB officials maintain that we will need practically all the productive capacity that is being displaced. Dislocations are inevitable. The major point is that when the armed services no longer need tanks, it cannot serve any good purpose to continue their manufacture.

Again, on machine tools, the cutbacks reflect the fact that the plants of the nation are pretty well tooled up. The demand for general

purpose tools is down. Special purpose tools are still needed in considerable quantity. The dollar volume of business available to the tool builders for additional needs of industry, export needs, and replacements is comparatively high. The decline from the previous peak levels is unfortunate, but there is nothing that can be done, except to convert to another type of production.

Government production officials maintain that there are vast unfilled production requirements——sufficiently large to keep the plants of the nation busy.

* * *

WAGE INCREASES ARE CONSIDERED INEVITABLE on the heels of the adjustment of mine wages. Irrespective of whether the miners are justified in their claim to a higher wage on the basis of higher cost of living, the increase in wage punctures the Little Steel Wage Formula. The portal-to-portal issue cannot camouflage the fact that an actual wage increase is involved.

Other unions will take up the cudgel and seek further adjustments. Objective of the War Labor Board will be to drag out the process of granting wage boosts until prices are stabilized, and if possible to establish another formula to replace the Little Steel Wage Formula when that instrument is no longer tenable. If the cost-of-living increase can be retarded sufficiently, the formula will be geared to the cost of living - - - as is now the case in Canada.

The crux of the cost-of-living increase issue is the lack of controls over food prices because of the Congressional farm bloc's continual contest over OPA efforts to keep agricultural prices in line.

The danger of permitting farm interests to siphon off too large a proportion of the consumer spending dollar is two-fold. First, the reaction on the cost of living is immediately reflected in demands for higher industrial wages, and second,the income of the farmer is highly intangible, with full collection of taxes difficult. Again in the matter of savings through war bond purchase, it is fairly simple to maintain a payroll savings plan in industry - - - but a general payroll savings plan is virtually impossible in agriculture.

One of the most pressing problems in wage payments is the loss of labor by essential civilian industry to higher pay war industry. Laundries and similar consumer services have been directly affected. White collar jobs in industry have been similarly hit. Clerical help has gone into the shop, attracted by the higher pay jobs. This is particularly true in the case of junior executives whose wage scale has been frozen at considerably below the current pay of skilled mechanics and foremen.

* * *

CUTBACKS IN PRODUCTION SCHEDULES have raised the issue of whether prime contractors affected by cutbacks will tend to maintain their practices of subcontracting.

Likelihood is that in some phases of industry, the practice of subcontracting will tend to lessen, while in others there will be a marked increase.

Example is the case of a large built-for-the-purpose tank plant, which formerly sub-contracted a large number of components and parts. This plant is being converted to output of extrusions for airplane parts, and obviously no sub-contracts will be involved. The tank program is a declining program.

On the other hand, ship builders are now sub-contracting electrical wiring jobs to electrical contractors formerly engaged in the building trades. Ship building (especially in the escort vessel fields) is an expanding program, and sub-contracting is on the increase.

The basic fact is that the dollar volume of production slated for the rest of this year and for 1944 is at a level that will keep the bulk of industry going at a high rate, and the current pattern of subcontracting should remain essentially the same.

MUNITIONS TO RATIONS— ACME *Steelstrap* GETS THEM TO ARMED FORCES

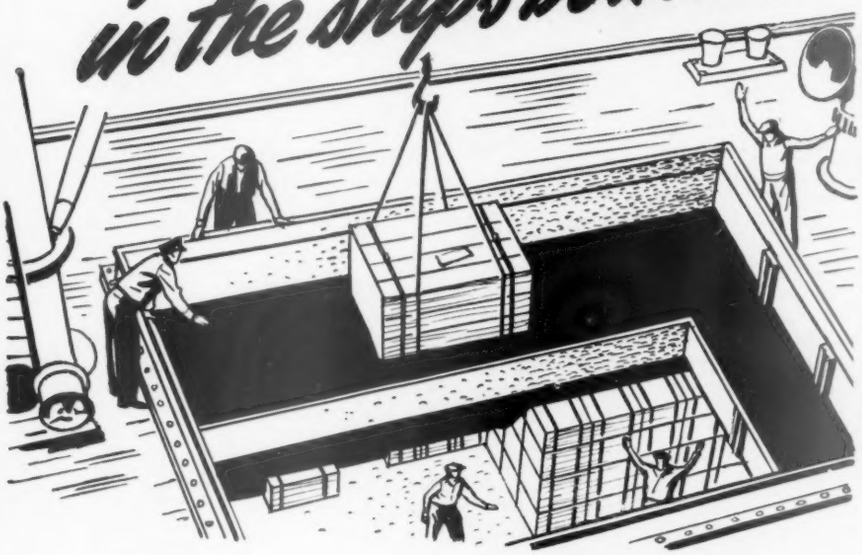
MACHINE GUNS are vital to the army—and must be protected in transit to be utilized on the fighting front. Maximum protection is secured with Acme Steelstrap. Strong packages, reinforced with one lengthwise and three crosswise steel-straps, are employed.

FIELD RATIONS are used by our fighting men when cooked meals cannot be obtained. Highly concentrated, they are scientifically prepared for maintaining an army's energy under trying conditions. Acme Steelstrap keeps the shipment safe in transit, while the installation of Acme equipment helps the packing crew meet delivery schedules.

IT MAY BE A LONG ROUGH JOURNEY
HELP ASSURE SAFE ARRIVAL AT THE FIGHTING FRONTS
★ Use Strapping of correct width and thickness.
★ Put all Strapping on straight.
★ Tighten and seal with supplier's specified tools.
★ Tighten straps—round or flat—until box edges are indented.
★ Boxes may shrink—strap when ready to ship.
STRAP THEM RIGHT—HELP WIN THE FIGHT

Recently, all Acme Steelstrap and Unit-Load users received copies of the new war poster shown above. It acts as a constant reminder for strappers to do their jobs correctly and thus assure safe arrival of vital materiel. Copies will be mailed to any shipper on request.

TOP PROTECTION *in the ship's bottom!*



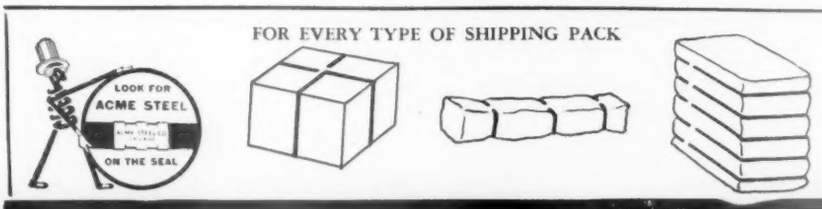
Cargoes for island outposts . . . lend-lease aid for fighting allies . . . supplies for our armed forces . . . in hundreds of ships' bottoms—safe from in-transit damage — because they were shipped right and strapped right. Acme Steelstrap, meeting all Federal Strapping Specifications, is helping to get many types of war shipments to destination in perfect condition . . . helping to conserve vital cargo space . . . helping them to withstand the rough handling which the speed-up requirements of a total war sometimes make necessary.

IT'S ONLY A WAR PRODUCT WHEN IT GETS "THERE"

Only when a product is in the hands of those who use it, does it become a real war product. If it arrives in damaged condition —it loses its advantages — and all the toil and sweat that went into its manufacture becomes just so much wasted effort.

Shipments that are Acme Steelstrapped are damage-free—ready for immediate use upon arrival. Besides, with Acme Steelstrap, important time savings are made in loading and unloading . . . container material is conserved . . . and costs are cut. There is a type of Acme Steelstrap for every kind of war package, including carload ladings.

Ease and convenience of Acme Steelstrap and tools are helping many women to do a fast, efficient job in the shipping room—rivaling the outstanding work other women are doing on the production line.



ACME STEEL COMPANY
2842 Archer Ave., Chicago, Illinois

Your Workers, Your Company, Your Country
All Lose—*with "Lost-Time Eyes"*

. . . protect workers' eyes with AO Goggles

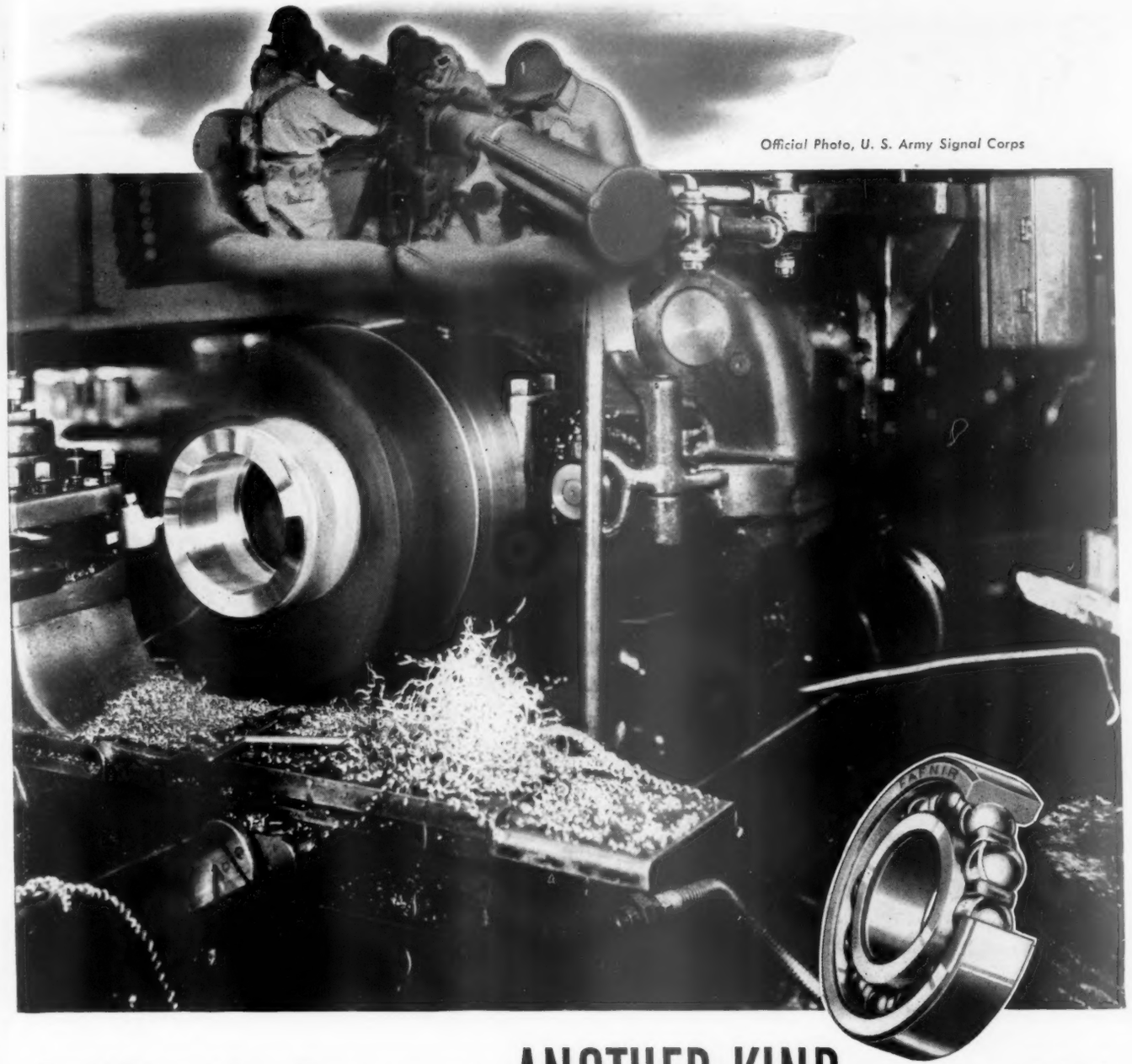
What does a worker think about while lying in a hospital bed or at home, suffering from an injured eye? He thinks of his own pain . . . the worry of his family . . . his lost time. He builds up a resentment against his company for not providing him with the proper eye protection.

But an eye-injured worker is not the *only* loser. Companies that *allow* "lost-time eyes" to happen also lose heavily in hard-earned dollars, irreplaceable workers, invaluable production. And as a result, our Country . . . for which we are all fighting . . . loses heavily, too, in vital war equipment.

Give your men and women workers AO Goggles to give our fighting forces *what they must have for Victory*. AO Goggles are strong and sturdy . . . yet they are also light and comfortable. Equipped with Super Armorplate Lenses, they provide maximum protection against impact. Have your Safety Director get in touch with the nearest American Optical office.

American Optical
COMPANY
SOUTHBRIDGE, MASSACHUSETTS

MANUFACTURERS FOR 110 YEARS OF PRODUCTS TO AID AND PROTECT VISION. BRANCHES IN ALL PRINCIPAL INDUSTRIAL CENTERS



Official Photo, U. S. Army Signal Corps

Getting the Range on ANOTHER KIND of Trouble!

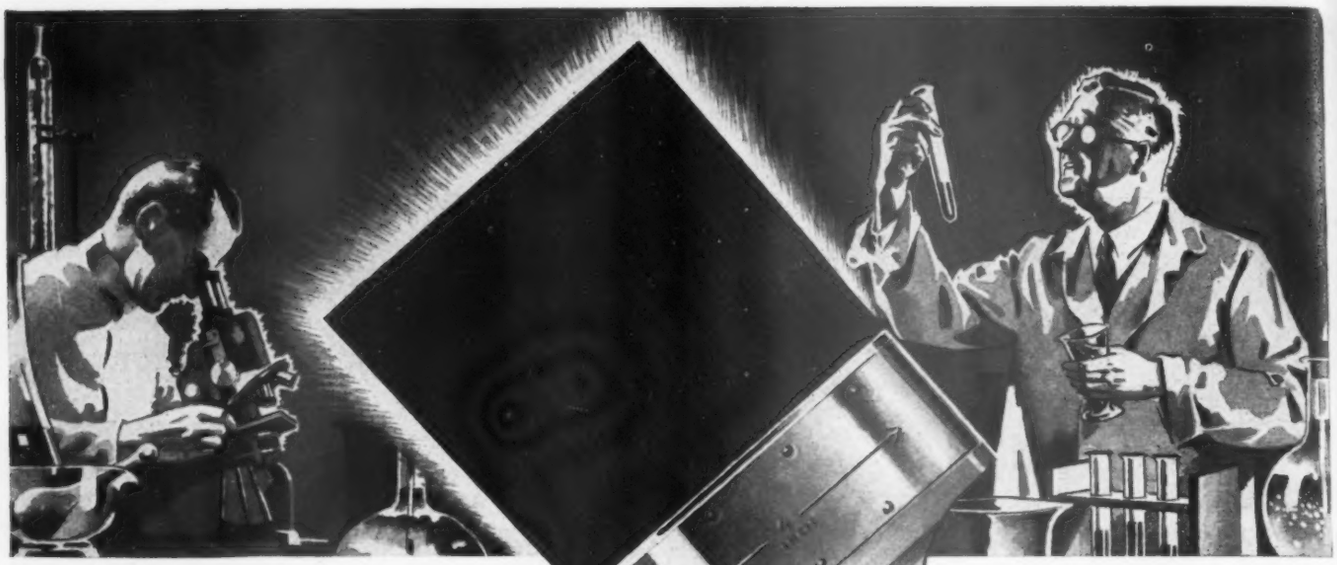
A slight chatter in a machine tool in a Michigan factory may cause a machine gun to jam in Africa. An important piece of equipment forced out of action in Delaware may mean that a Marine in New Guinea runs out of ammunition. Discouraging the relentless attack of *trouble* is a matter of most serious concern throughout our great war industry, right now.

This need to eliminate troubles, slow-downs and breakdowns in these hard working machines is magnifying the importance of Ball Bearings! Friction-free Fafnir Ball Bearings were made to discourage these casualties. Their rugged stamina and Balanced Design . . . larger balls and deeper races . . . keep them on the job on machines whose work-day is 24 hours *every day*. Their in-built precision defeats chatter and deflections on machines that must hold tolerances on the button . . . month after month The Fafnir Bearing Company, New Britain, Conn.

ARMY (E) NAVY

FAFNIR

BALL BEARINGS



After Years of Laboratory Work and Extensive Testing "Pittsburgh" Now Offers

NEOCETA*

SYNTHETIC BRISTLE BRUSHES

Comparable in Quality and Performance to Brushes Made with Pure Natural Bristle

"Pittsburgh" scientists started their experiments two years before Pearl Harbor. They had instructions to continue their research work until they had developed synthetic bristle brushes which would be as efficient in performance as those made with the best natural bristles.

After three years, they have succeeded in meeting the specifications. As a result, "Pittsburgh" now offers America's first full line of synthetic bristle brushes. Repeated tests prove that these Neoceta brushes compare favorably with any pre-war brush you have ever used.

Everything You Ask for in A Paint Brush!

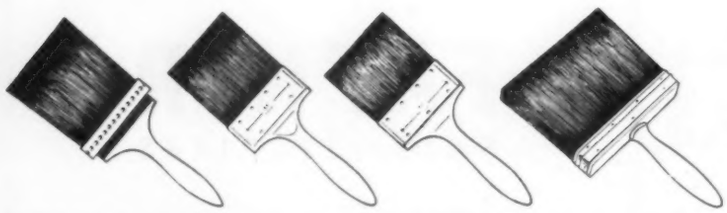
Neoceta brushes are highly practical and workable. Examine this bristle under a microscope and you will find that its taper is very similar to a natural bristle's. This allows paint to flow evenly and brush on smoothly. Neoceta brushes hold as much—*or more*—paint as pure bristle brushes and rival them in durability, spreading ability and the character of the film they produce. Here, in short, is a product that stands squarely on its own merits.

Availability

Winning the war comes first! Brushes of Neoceta are now available to the Army, Navy, or contractors for war materials for the Armed Services.

Bristle brushes, made and distributed in accordance with W. P. B. regulations, are also still available, with the necessary priority, through "Pittsburgh" branches everywhere.

**Trade Mark Reg. U. S. Patent Office No. 397,100*



PITTSBURGH PLATE GLASS COMPANY

NEOCETA brushes are manufactured by the creators of famous *Gold Stripe* brushes

LOOK

to TINNERMAN

for newer and faster fastenings

Many New Types Just Released

• Turn your beam on the steady stream of new SPEED NUT shapes and sizes. High-precision production is turning them out at machine gun speed. Demand is spreading to more and more applications. Why? Because Speed Nuts drastically reduce weight and cost. Because they lock on screws with a firm spring tension grip that prevents vibration loosening. And because they can be applied with a speed that breaks all previous records.

Many self-retaining Speed Nuts are snapped into position for blind location assembly requiring no riveting or staking. They need not even be touched or seen while making the attachment. Approved, too, by the U. S. Army Air Forces and the Navy Dept. Bureau of Aeronautics for most non-structural attachments.

Write for our new 20-page book No. 185 for complete description of our latest developments.

TINNERMAN PRODUCTS INCORPORATED
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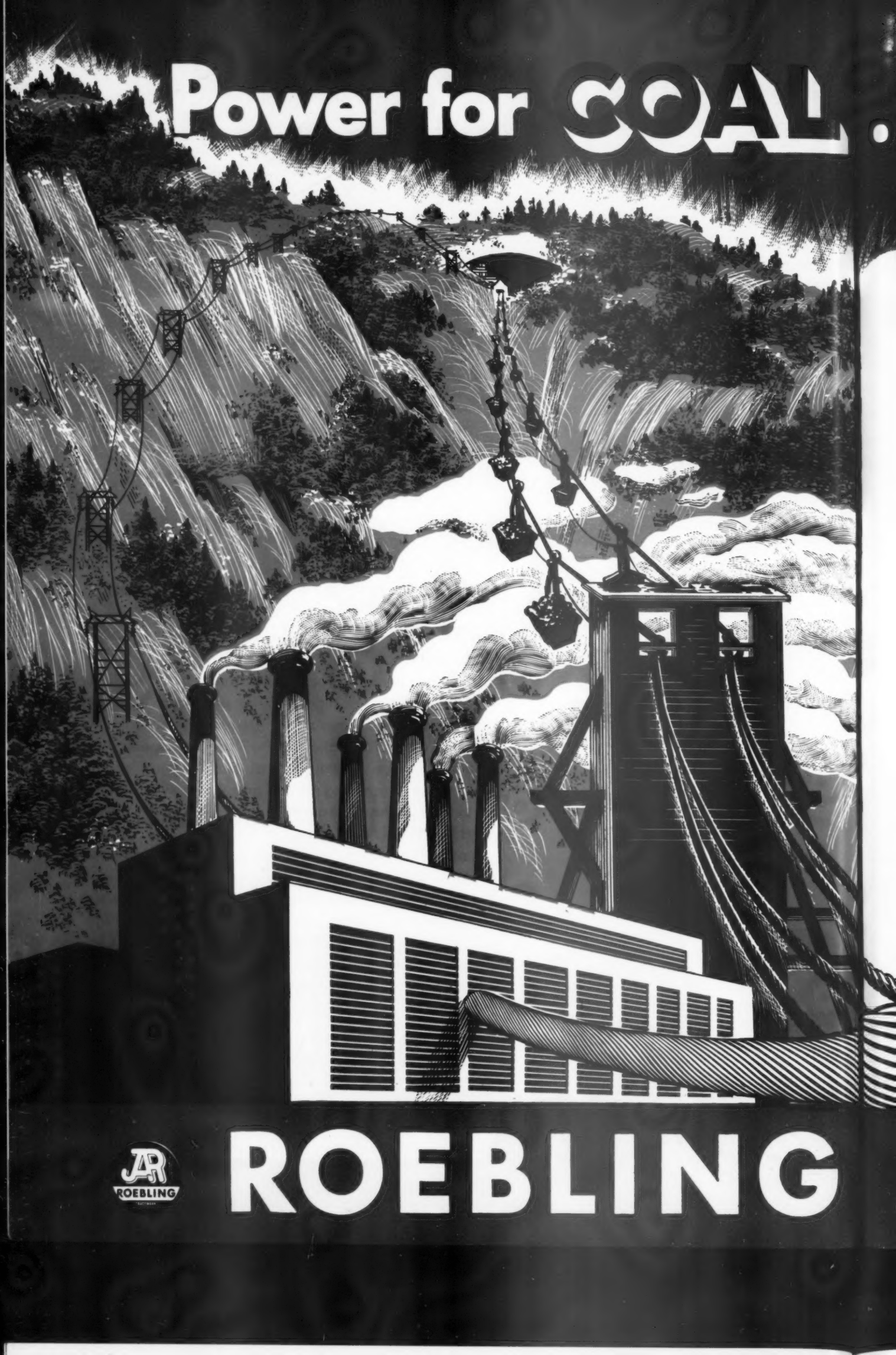
Wallace Barnes Co., Ltd., Hamilton, Ontario

IN ENGLAND:
Simmonds Aerocessories, Ltd., London

THE FASTEST THING IN FASTENINGS!


Power for COAL.
ROEBLING
JAR
ROEBLING

. coal for POWER

ROEBLING WIRE PRODUCTS MOVE THEM BOTH *for Victory!*

600,000,000 tons of coal in 1943! As a handy scale to gage the size of America's effort for all-out Victory, keep that figure in mind. *Six hundred million* tons of heat for homes—coke for steel—chemicals for explosives: six hundred million tons of power for Victory!

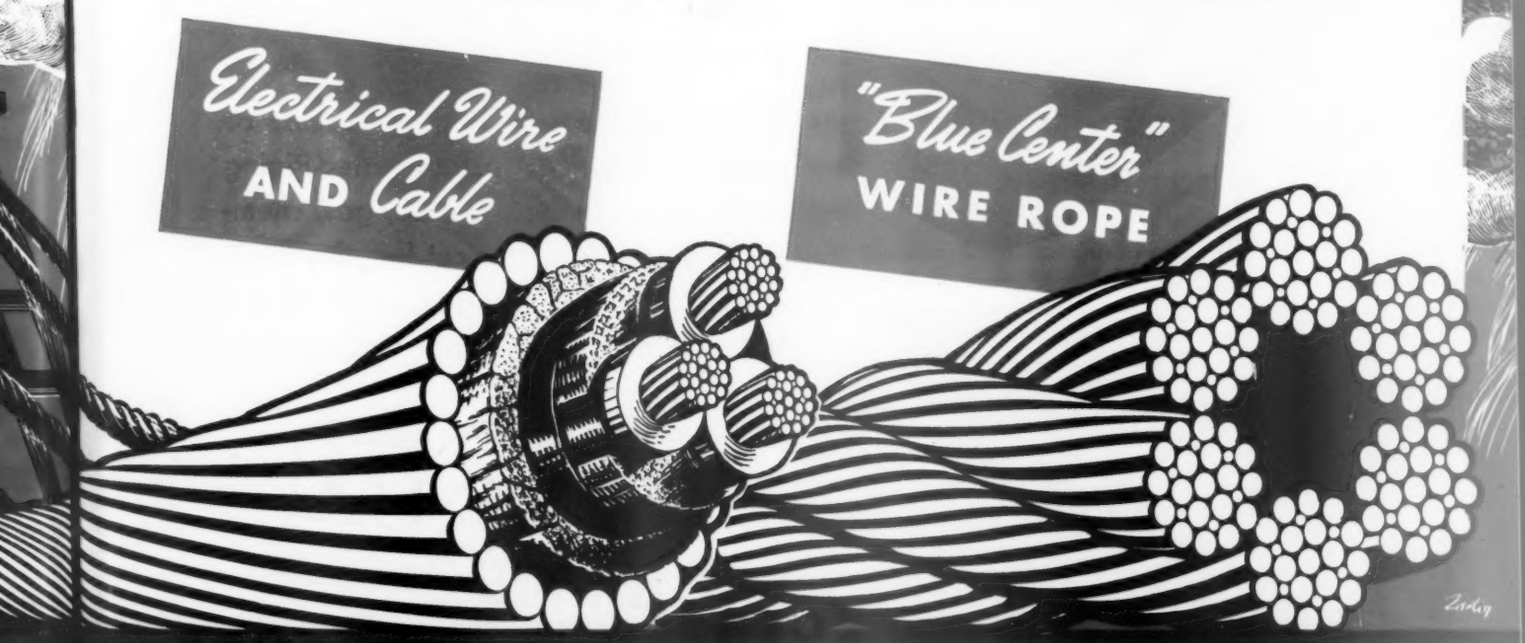
Producing that prodigious amount of fuel for America at war is a job that takes everything the 600,000 men on the coal front can give it! Strength and courage and skill and initiative—and the help of the finest equipment America's industries can produce.

Roebling "Blue Center" Steel Wire Rope, Roebling Electrical Wires and Cables—both are helping to carry the load, moving power into America's mines, taking coal out. Electrical wires on transmission lines, at sub stations, on mining machines . . . Wire rope on shaft hoists, inclines, aerial tramways . . .

Nor are these Roebling's only contributions to the steady flow of power for America's industries. On giant cranes that handle coal at loading and distribution points, Roebling "Blue Center" Steel Wire Rope continues its service—and Roebling Electrical Cables again carry the power. On ships and power barges, at power plants and war factories—wherever war goods are moved or used, one or both of these Roebling products is on the job, helping to exchange coal for power, power for coal . . .

Your nearest Roebling office or Roebling Distributor is ready to put these products to work for you. Ready to put to work with them too the experience gained in supplying the needs of America's hundreds of industries —and the knowledge gained in constant striving to give those industries better Roebling Wire Products all along.

JOHN A. ROEBLING'S SONS COMPANY
TRENTON, NEW JERSEY
Branches and Warehouses in Principal Cities



Pacemaker in Wire Products

FLORI helps invasion. Recently we equipped invasion barges with fuel oil lines, sea water lines, bulk head connections, propeller skegs — an order of about 70,000 pieces completed ahead of rush schedule.

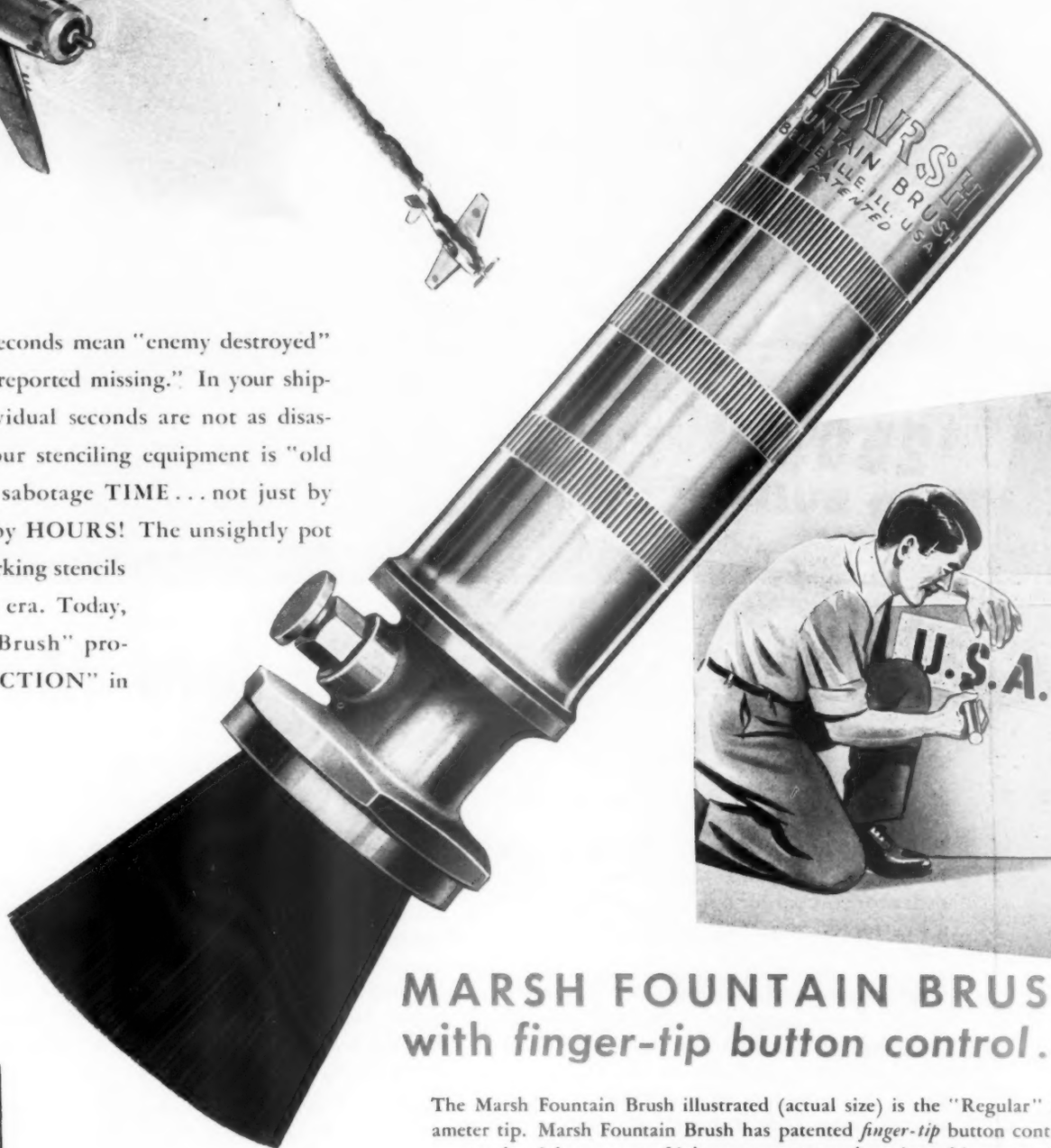
We can make anything in tubular or plate steel fabrication: Fabricated Piping — for steam, water, air, oil, gas, chemicals • Random mill or cut lengths, bent, coiled, welded, flanged, threaded • Valves, Pipe Fittings. *Send your inquiries.*

FLORI PIPING

THE FLORI PIPE COMPANY • ST. LOUIS — CHICAGO

HERE'S ACTION-FAST
FOR YOUR SHIPPING ROOM

In the air split seconds mean "enemy destroyed" or "our aircraft reported missing." In your shipping room individual seconds are not as disastrous. Yet, if your stenciling equipment is "old fashioned," you sabotage TIME . . . not just by seconds . . . but by HOURS! The unsightly pot and brush for marking stencils is from the past era. Today, the "Fountain Brush" provides "FAST ACTION" in *stencil marking.*



MARSH FOUNTAIN BRUSH
with *finger-tip button control* . . .

The Marsh Fountain Brush illustrated (actual size) is the "Regular" 1½" diameter tip. Marsh Fountain Brush has patented *finger-tip* button control that assures the right amount of ink necessary to mark various shipments. A stencil can be marked in 3 seconds. Handle holds sufficient ink for marking 500 stencils without refill. Can be used with black or colored fountain brush inks. Tips are easily replaced when worn. This modern, speed method of marking stencils saves up to 25 hours a week in labor and 20% on ink. It pays for itself in 3 days. Send us your order at once or write for *all* the facts. No obligation.

Replaceable tips fit ALL Marsh Fountain Brushes. To replace... unscrew old tip and put in new one.

WRITE . . . WIRE . . . OR PHONE

MARSH

MARSH STENCIL MACHINE CO. 37 MARSH BLDG. BELLEVILLE, ILL.

but a $1.10 order got it into the air

Billion-dollar orders for aircraft get the headlines, but more than once, a *dollar* order to Graybar for a missing part has been a key factor in getting a plane fully ready for flight.

One important builder, for example, rushed five emergency orders for production items to Graybar in a single day. Their amounts? $1.10, $15.00, $5.00, $1.10 and $1.10. One covered an all-important set of special fuses. Others were for cable rings, clips, fittings and special lamps.

In one case, a special messenger made immediate delivery from stock. In others, telephone calls to St. Louis and Cleveland helped speed delivery. All were "money-out-of-pocket" orders for Graybar, from the short-range point of view.

In building today's complex combat equipment, emergency needs like these are inevitable, no matter how carefully buying is planned. That's why prime contractors whose orders run to billions maintain a close tie with a local Graybar office, with daily or even hourly contact.

From its nationwide network of warehouses, from its well-informed relations with more than 200 leading suppliers, Graybar serves as Procurement Advisor on electrical needs, large and small. Why not check up now to see if your company is using Graybar's time-saving services to the full?

Executive Offices:
GRAYBAR BUILDING
New York, N. Y.

GraybaR

IN OVER 80 PRINCIPAL CITIES

GraybaR Everything Electrical . . . THAT IT TAKES TO WIN!

PURCHASING

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Publishers

STUART F. HEINRITZ.....Editor

GEO. E. HENRY....Associate Editor

A. M. MORSE, Jr.....Manager

J. K. Mulford.....Art Director and Production Manager

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Washington Editor
A. N. Wecksler
National Press Building

Western Manager
Stanley J. Smith
333 N. Michigan Ave., Chicago, 1

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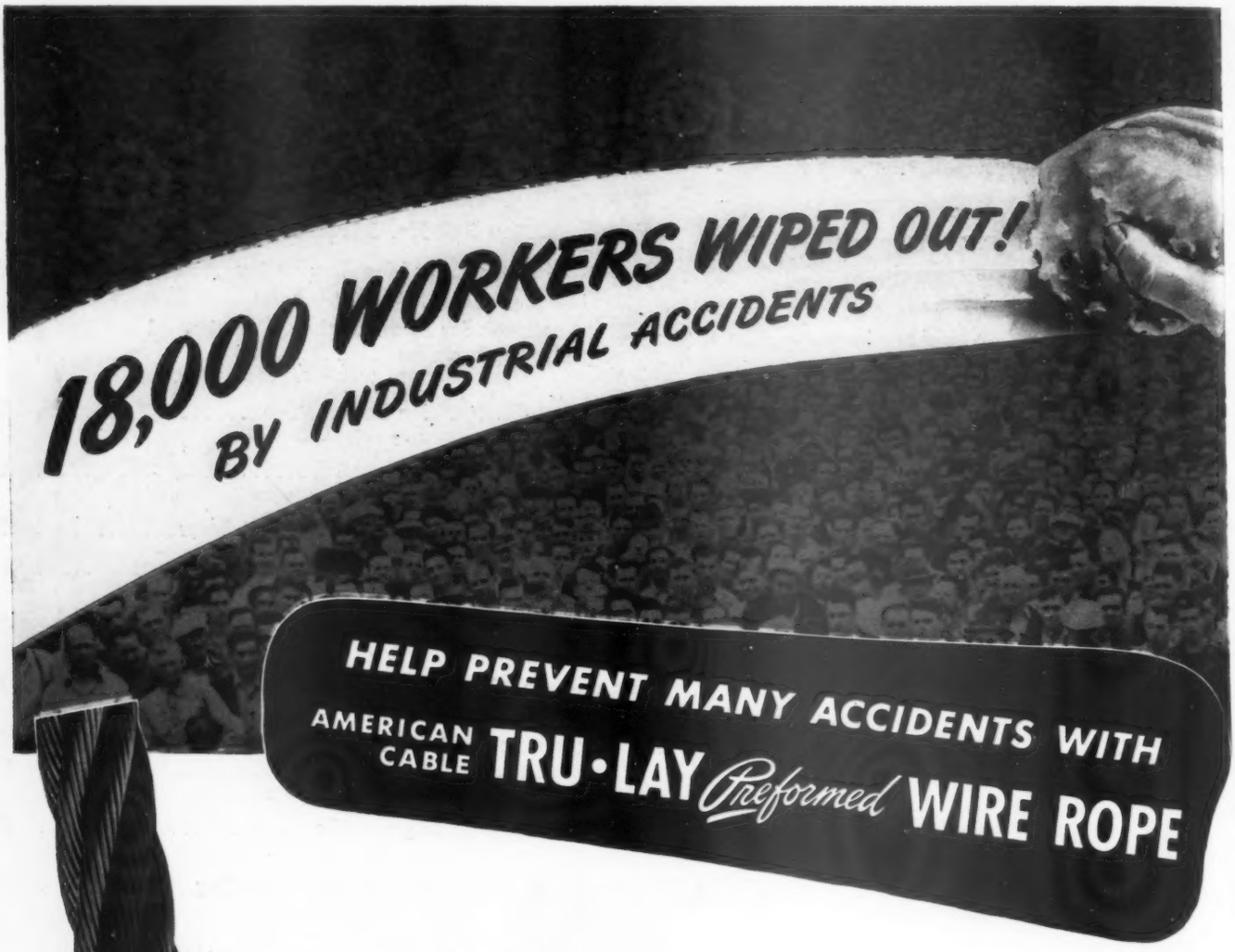
18,000 WORKERS WIPED OUT!
BY INDUSTRIAL ACCIDENTS
HELP PREVENT MANY ACCIDENTS WITH
AMERICAN CABLE TRU-LAY Preformed WIRE ROPE

You would be horrified at newspaper headlines which said the enemy had wiped out an entire division of the U. S. Army! Yet, in 12 months after Pearl Harbor, an entire division of industrial workers were killed by accidents—*many of them needlessly.*

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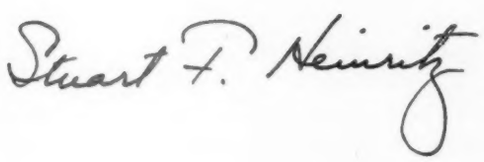
WAR PRODUCTION STILL No. 1 PROBLEM

AMERICAN industry today is fooling itself with a complacency just as dangerous as that which made Pearl Harbor possible. We are lulled by pride in our own production achievements, by the news of military successes, by cutbacks which really represent changing needs and not fewer needs, by considerations of contract termination, by the new emphasis on civilian requirements, and by the current fad for post-war planning. Too many people are considering the war as already won, and are gazing at the post-war pastures of peace-time production rather than on concentrating on the immediate job of producing to win the war.

The stark facts are that we must think in terms of a long war—until it is actually won; that war production for 1943 must be 80% greater than in 1942; that in the first quarter we produced only about 19% of the year's quota, and only about 40% in the first six months. The urgent needs of war production over the balance of the year will test the capacity and courage of American industry. And the schedule for 1944 calls for 24% greater output than in 1943.

Winning the war just as quickly and decisively as is humanly possible is still our No. 1 job, on the battle front and on the industrial front alike. Of course we are thinking about reconversion. But we know that we can meet that problem when we come to it. We have the experience of 1942 to help, and this will be easier in that we shall be returning to familiar ground. Meanwhile, the worst possible mistake is to let post-war planning interfere with winning the war itself, for until that job is finished there can be no such thing as a post-war economy.



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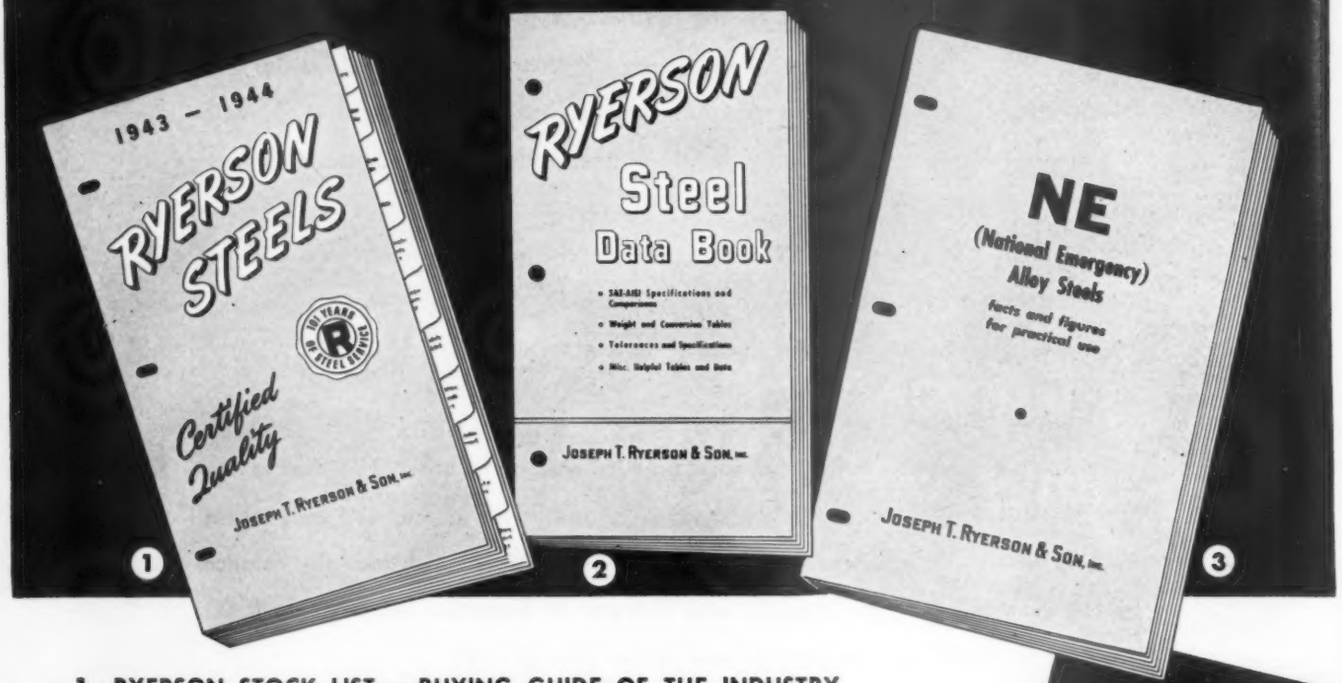

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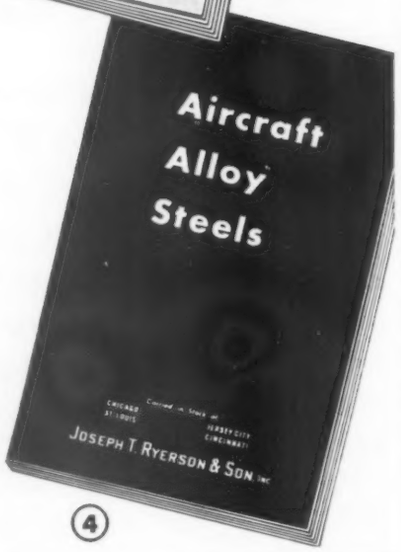

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RYERSON STEEL-SERVICE

Schedules of military requirements are even greater through 1944; no tapering off is in sight; industry urged to make greater effort

By
CHARLES E. WILSON
Executive Vice Chairman
War Production Board

NO BREATHING SPELL for WAR PRODUCTION

THE fact must be faced that the hardest part of our job remains ahead. We cannot afford to let a few weeks of victorious news blind us to the sinister power which our enemies still retain.

About a year ago I saw a cartoon of Uncle Sam as a champion athlete, strong and confident, who has allowed himself to get out of condition. The picture has stayed with me. When this easy-going champion of ours saw a gang of dangerous toughs coming toward him, he paid little attention. Suddenly without warning one of them struck him a wicked foul blow. Then, soft though he was, in a surge of anger he hit back fiercely with all his great strength. His attackers, who thought they had a sure victim, were astonished at his power. Now after a short time they feel their own strength ebbing. They have only one hope left. Perhaps he is too soft to stay the distance—perhaps he will ease up, give them a chance.

We shall not ease up. But we must face the issue clearly. After the shock of Pearl Harbor, hot fury galvanized American industry into action. It was the fierce determination to avenge our murdered men that converted our factories overnight. It was in bursting indignation that we applied our inventive power to the tools of war. It was with a deep sense of outrage that managers and workers alike plunged eagerly into long days and nights of hard work.

This display of initial strength was a major factor in saving us and the world from being crushed by the gangster nations. But it takes more than an angry reaction, more than a first punch to make a champion. It takes staying power as well. And now the time is at hand to show how hard our muscles have become, to show that we are in fighting trim, in condition to last through any fight. Now is the time when industry must get its second wind, prove its staying power, its ability to carry through its job with grim determination until the enemy is conclusively beaten.

We have had an unforgettable example of courageous endurance under adversity from China, from England, and from Russia. By comparison, we have hardly begun

to make sacrifices. It is simply unthinkable that we should show less grit in sticking to our purpose.

There have been too many rumors of late to the effect that we reached a breathing spell in our war production program. It is being whispered here and there that the need for armaments is beginning to taper off—that business men ought to start thinking about peace-time production and workers about peace-time jobs. These rumors are not merely totally false—they are also extremely dangerous. They have the familiar ring of enemy propaganda. They are precisely what Hitler and Tojo would like us to think.

Here are some plain hard facts. Our production was good in the first quarter of 1943. This spring our total production of munitions was more than double the production for the spring of 1942. But in that quarter we completed only 19% of the scheduled munitions output for this year. Over four-fifths of the 1943 munitions job has had to be scheduled for the last three quarters of this year. But our schedule for next winter calls for 40% more munitions than we are producing now. Does that sound like tapering off?

Next year, 1944, our schedules based upon the anticipated needs of the Army and Navy call for an output 24% above that scheduled for 1943. And the monthly average for 1944 will have to be higher than the peak rate scheduled for the big fourth quarter of this year. In the face of these facts, how can anyone talk now about a slackening in war production?

These are actual production goals, not rumors. They represent the judgement of our best military minds as to the needs of the armed forces in the fierce fighting which looms ahead. Under these conditions it is mere self-deception to begin to think of "business as usual." Right now for the first time in American history, war expenditures have risen above consumer expenditures, and this trend is bound to continue.

Schedules Are Increasing

It is easy to understand why some people have got the impression that war production is being curtailed. Men who have been making tanks, for example, are aware that the production rate for tanks has been lowered. For one thing, we were producing tanks in large numbers to meet the needs of one of our major allies. During the past year this ally has been able to develop its own tank production so that it no longer requires tanks from us in the same quantity as before. We still need tanks, of course, and we are still producing a very large quantity of them, but the military picture has permitted us to revise the earlier tank schedules downward, for the time being, at least.

But although to men who have been making tanks it may appear that war production is falling off, managers and workers producing other kinds of war material have reason to know that production is being stepped up. For example, it is now a familiar fact that the use of the tank on the battlefield has been greatly modified as a result of the introduction of high velocity artillery firing armor-piercing ammunition. As tank requirements have come down, the requirements for artillery and ammunition of this type have sharply increased.

Even greater is the scheduled increase in aircraft production. Manufacturers producing for our air forces are being called upon to make an effort far surpassing what has so far been done. In numbers of planes scheduled for production this year, America's output will be double the production in 1942. Measured in tonnage, this year's output of planes and plane parts will be nearly three times bigger than in 1942. And in 1944 it will be more than twice as big as this year, for we are planning to put an umbrella of safety over the heads of American troops everywhere.

Our great achievement in cargo ship building is familiar. Our total output in this field in 1941 was approximately one million dead-weight tons. In 1942 it was eight times greater. And during the first six months of the current year our production of these ships will exceed the entire 1942 production by approximately 12%.

But a further development is now being planned in the construction of cargo and fighting ships, and in the production of component parts for ships. A tremendous job is still ahead of us, for we must produce in the remaining six months of this year 25% more ships than were produced in the first half of the year. Our 1943 goal for cargo ships alone aggregates over twenty million tons—two and a half times the record output of 1942.

These figures, and other figures like them, have tremendous significance for every man in American industry whether he be manager or worker. In every region America's plant capacity and production skills will have to be concentrated on war output because that output needs to be larger and better than ever in the months ahead.

American managers and workers must realize that cutbacks and curtailments in production schedules for individual items do not imply a falling off in total war production. For every weapon whose production is revised downward, there is another weapon, or several, whose production is being revised upward.

When the war came, we already had great production facilities for munitions. But we needed more. Since then, America has almost completed an enormous, I might say an incredible, expansion of its munitions plants. The cost of this expansion through 1942 amounted to almost the value of the munitions of war produced in this country up to that time.

This giant plant is operating to the fullest capacity permitted by the raw materials available. But it has never yet been operated at full speed. And from this point on until the end of the war full speed must be attained, for we can and must produce a volume of weapons fully up to the needs of our fighting forces. This means that we must crack the raw materials bottleneck. The supply of basic raw materials must be increased. This task is now well on the way to accomplishment. Furthermore our plan for the distribution of raw materials to meet scheduled requirements has been perfected and is now operating to the general satisfaction of industry.

More and Better Weapons

If you have allowed your thoughts to dwell on a quick return to comfortable peace-time production schedules, speak to soldiers who have just come back from the battlefields and hear what they have to tell you. The generals on the fighting fronts scoff at the notion that we can afford to relax the drive for more and better weapons. Even today we have not completely equipped our ground forces. We have not by any means made all of the changes that will be required in our weapons. At the same time we must provide heavily for the proper maintenance and replacement of equipment. We must provide for combat expenditures of weapons. We must send the equipment and supplies which our allies need in even greater quantities.

And above all we must build up powerful reserves of munitions and weapons of all kinds—reserves that mean safety for our fighting men. So long as there is any question as to whether a piece of equipment will be needed by our troops, we must go on producing that equipment until the last measure of probable need is satisfied.

We are not slackening. We cannot slacken. If we do, we throw away a magnificent opportunity. This first year and a half of our war has brought us closer to victory than anyone dared hope when it began. This is the time to tap all of our reserves of strength and endurance, to throw everything that we have into a final, irresistible attack.

We have had to gear our production as accurately as we could to the actual combat experience of our armed forces. Changes that we make in production result from that experience. New weapons are developed. We learn that one weapon works better than another. The Army begins to fight on new terrain or in a new climate, and weapons need to be modified accordingly. When orders go out from Washington—

"Change that design!"

"Reduce that schedule"'

"Step up production!"

"Stop producing this and produce that!"

—those orders reflect the actual life and death judgment of the men who are fighting this war for us. Those orders are meant to save American lives by providing our men with killing tools that shoot first, farther, more accurately, and more rapidly than the enemy. If through any faltering or delay on our part, any man on the fighting front can say to himself, "They're letting me down back home," we have miserably failed in our duty.

Experience Dictates Standards

In normal times before the war, we producers took it for granted that our products had to be built to the needs and desires of our customers. We spent a large part of our business energies in trying to find out precisely what those needs and desires were. The concern that came closest to satisfying the customer was the concern that was most successful.

In one respect, wartime production is much the same. Today the fighting man is our customer. His needs, as determined by his experience in the blood and sweat of battle, must be our only guide in determining what to produce. The standards that we set must be his standards. The changes that we make are the changes that his experience proves necessary. It is he, in the final analysis, who finds out whether a weapon is perfect or not, and he answers for any imperfection with his life. Only the managers and workers who are enterprising and skillful in satisfying their new customer, the fighting man, are entitled to feel a sense of duty well done and of obligation fully performed.

Victory Is the Goal

Necessarily, orders from Washington which unexpectedly change schedules are disturbing to men on the production line. I know how irritating it is just when you get a complicated production system working smoothly to have to tear it apart and start over. I know there must be a strong tendency to say, "Why can't those fellows in Washington make up their minds?" The fact is, we have made up our minds, as you have, to do the painful hard work required to win this war, regardless of cost and effort. We intend to see that American soldiers and sailors and airmen are provided with weapons and supplies that will give them a crushing superiority over the enemy. To maintain this superiority we must be flexible and alert enough to make every change and introduce every development which battlefront experience shows to be needed.

Weapon for weapon, we must be prepared to meet the enemy on every battlefield and to go him one better in the way of mechanical perfection and quantity production. If any one of us, through failure to make a maximum effort, allows German and Japanese production to match ours at any point, that man has much to answer for. The only way in which we can protect the lives of our men, the only way in which we can do our part in cutting down American casualty lists, is to insure the superior quantity and quality of the weapons which we put in the hands of our armed forces.

Have you ever stopped to ask yourself whether you are doing all you can to shorten this war—a war fought in agony by men uprooted from their homes? Have you considered what it would mean in the way of saved American lives if by increased and improved output of war goods you help shorten the war by a day or even by an hour?

I firmly believe that American producers have it in their power to bring the day of final victory nearer not only by a matter of hours, but by a matter of months. That is why it is so distressing to see disagreement and disputes between overconfident Americans who bear the responsibility for war production.

We producers of war goods have an opportunity such as has never come to a civilian population in wartime before. If now we put aside selfish considerations, if we are big enough to stretch out the hand of goodwill toward fellow workers with whom we disagree, if we can get more and better equipment into the hands of our soldiers and sailors and airmen, we can bring back home literally thousands, perhaps hundreds of thousands of young Americans whose lives might otherwise have to be sacrificed to win the war.

Industry's Responsibility

Although to insure maximum war production, WPB has had to do some drastic things, wherever possible we have avoided breaking down the established prerogatives of management and labor. Your basic powers and rights have been left intact. But just as the powers and rights have been left with you, so also is the responsibility yours—the responsibility to cooperate in winning the war as quickly as the job can be done.

It is the spirit of voluntary cooperation which has given American war production the tremendous power that is amazing the world today. Events have taught us the weakness of any so-called efficiency which ignores human values. The cold, mechanical robot efficiency of which the Nazis boasted has begun to crumble. The real efficiency is seen to be that which we of the democracies have displayed, for it derives its strength from the courage and determination of free men, united in a great purpose.

That courage and determination must not falter now. Every day that this war lasts is a day of judgment for us. It is up to us to find the best in ourselves, and bring it forth in our daily work—to live and act in such a way that when the war is over, when our young men return, we can look them in the eye and say without hypocrisy, "We, too, did all we could."

Abstract of an address before The Economic Club of Detroit, June 11, 1943.

Walter C. Skuce, Director of the Controlled Materials Plan, Division of the WPB Production Controls Bureau. (Harold Boeschenstein who formerly held that title, now is Director of the Bureau.) Mr. Skuce came to WPB from General Electric, where he was Supervisor of Inventory Control, Supervisor of Waste and Spoilage Control and Supervisor of Production Methods.

By
WALTER C. SKUCE
Director, Controlled Materials Plan Division
War Production Board

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CMP PROCEDURES for MAINTENANCE, REPAIR

ONE major phase of war production activities is the maintenance of equipment and facilities in proper operating order. It is useful to industry itself, as well as to the general war effort, that production facilities be maintained in the best possible operating condition.

The MRO procedures contained in CMP Regulation No. 5, recently revised, represent the instrument available to industry for obtaining both controlled and non-controlled materials for maintenance, repair and operating supplies.

CMP Regulation No. 5 has been recently revised to provide a more workable procedure.

The new Regulation adjusts listings of industries between Schedule I and Schedule II. Actual comparison of the industries as now listed with those formerly listed is difficult, because of the change in terminology.

Industries listed in Schedule I continue to have available for their use in securing MRO items, the AA-1 preference rating. The AA-2 preference rating, re-established under the terms of recent amendment to Priorities Regulation No. 1, as a separate preference rating, has been made available to industries and businesses listed in Schedule II.

Unlisted enterprises may now use the AA-5 preference rating.

This adjustment in the MRO rating structure was brought about by an over-all adjustment in the relative urgency status of major production programs. It reflects the emphasis which is now being placed on maintenance, repair and operating supplies, indicating their great importance to the war effort.

A special ruling has been obtained, however, which eliminates the necessity of down-rating orders placed prior to May 16 for MRO supplies where an industry has been assigned a lower rating as a result of revision of the schedules.

Minor Additions

Provisions of the Regulation relating to minor capital additions, have been clarified. The amendment permits minor capital additions to be purchased under the MRO procedure where the cost of any one complete capital addition does not exceed $500, excluding the *purchaser's* cost of labor. "One complete capital addition" means a group of items customarily purchased together or all items which would be normally purchased as part of a single project or plan. Capital additions may not be subdivided for the purpose of bringing them within the $500 limit. Where such a capital addition involves construction, authorization to construct must be obtained to the extent re-

Recent revisions recognize importance of adequate maintenance programs and reflect changing emphasis in war needs.

and OPERATING SUPPLIES

quired by Conservation Order L-41, or by any other applicable Order or Regulation of the War Production Board.

The minor capital addition provision now clarifies that the purchaser's cost of labor is the only labor cost which may be excluded from the cost of a minor capital addition to determine whether or not it comes within the $500 limit. This eliminates the construction which might possibly have been placed on the minor capital addition provisions of the former Regulation to the effect that all labor costs might be excluded from the cost of an item in determining whether or not it came within the meaning of the term "minor capital addition."

Aluminum Use Restricted

The revised Regulation has been clarified to indicate that aluminum may not be obtained under the MRO procedures except where the use of other materials is impracticable.

Persons engaged in the business of producing items covered by Schedule I and II of the Regulation, as revised, who need aluminum in any of the forms or shapes constituting controlled material in greater amounts than 100 pounds during any one calendar quarter, may apply for larger allotments by letter addressed to the Aluminum and Magnesium Division, War Production Board, Washington, D. C., Ref: MRO. This letter of application should contain substantially the information required by sub-paragraph (d) (1) (6) of Supplementary Order M-1-i, as amended March 10, 1943. If the application is granted, the applicant will receive an allotment number or symbol. He may then place an authorized controlled material order by endorsing his order form with the allotment number or symbol and the proper form of certification.

The War Production Board is anxious that all industry should cooperate in an effort to conserve essential aluminum supplies. This anxiety stems from the tremendous requirements of the aircraft program for aluminum.

As a result, WPB urges all industry to substitute other materials for aluminum whenever possible. This has been the desire in operations under MRO procedures all along, but the regulation has never specifically required such substitution. The revised version makes this requirement mandatory.

Quantity Limits

The amendment makes it clear that a delivery order rated under the Regulation bearing the appropriate certification and the MRO symbol shall have the status of a delivery order bearing a preference rating with an allotment symbol as provided in CMP Regulation No. 3.

The quantity restrictions of the Regulation as amended provide that no person who uses the allotment symbol or preference ratings assigned by it to obtain *any* maintenance, repair or operating supplies, shall order for delivery during any calendar quarter maintenance, repair or operating supplies in an aggregate amount exceeding 1-quarter of the aggregate expenditures for maintenance, repair and operating supplies during the calendar year 1942 (or his fiscal year ending nearest to December 31, 1942), except that a person engaged in a seasonal business using such allotment symbol or preference rating may order for delivery during any calendar quarter up to, but not in excess of his aggregate expenditure for MRO items during the corresponding quarter of 1942 (or of such fiscal year.) This amendment places the quantity limit definitely upon an "order" basis, rather than upon a delivery basis.

WPB officials believe that industry will find the "order" basis much more workable than a delivery basis for determining the maximum MRO limits. Through computing the aggregate expenditure for MRO on the basis of orders placed, it will be possible to more accurately determine whether or not the limits are being observed.

In determining the dollar amount expended for MRO supplies during an operating quarter, expenditures made without the use of preference rating or symbol plus amounts expended in acquiring minor capital additions, shall be included as well as MRO items obtained with the use of the allotment symbol or preference ratings assigned under CMP Regulation No. 5. In determining the amount expended for MRO items during base period, the same procedure shall be followed, except that expenditures for minor capital additions shall not be included.

Quantity restrictions on the use of MRO procedure are removed from manufacturers whose aggregate requirements for MRO supplies do not exceed $5,000 per year.

Service Shops

Persons (such as service repair shops) engaged in the business of doing maintenance or repair work for others may use the same allotment symbol and preference rating to obtain materials for the performance of such work which their customers would be entitled to use if the customers did the work themselves. Expenditures for materials needed for such work shall be treated as the customer's expenditure for the purpose of computing quantity restrictions of the Regulation. However, persons engaged in such business may request allotments of controlled materials and preference ratings by filing Form CMP-4B, but if this procedure is followed, it must be used exclusively and customer's ratings or symbols may not be employed.

A landlord may use his tenant's allotment symbol or rating to obtain MRO supplies (including controlled materials) for the leased property, if the tenant is engaged in production of products or a business listed in Schedule I or II.

However, where the same property is occupied by several tenants and the supplies are not for the exclusive benefit of a single tenant, the landlord may only use a tenant's

rating if 75% or more of the leased property is leased to tenants on Schedule I or II, and in such case if any are on Schedule II he can only use the AA-2 rating.

Persons requiring MRO items who are unable to obtain them with ratings assigned by CMP Regulation 5, as amended, and persons requiring controlled materials except aluminum, for MRO purposes, who are not listed in Schedule I or II, may apply for a higher rating, or the right to use the MRO symbol to obtain copper and steel, to the nearest local office of the War Production Board, on Form PD-1A.

Canada Is Included

The MRO procedures have been made available to manufacturers operating in the Dominion of Canada. Upon application by the Department of Munitions and Supply, Ottawa, Canada, such manufacturers may be authorized by the War Production Board to operate under CMP Regulation No. 5, subject to such conditions as may be contained in the authorization.

In using the MRO procedure, Canadian firms are obliged to use the following certification:

> "The undersigned purchaser certifies, subject to the penalties of Section 15 of the Canadian Wartime Industries Control Board Regulations, to the seller, to the Canadian Priorities Officer, and to the War Production Board, that, to the best of his knowledge and belief, the undersigned is authorized, under applicable Canadian Orders, and under applicable War Production Board Regulations or Orders, to place this delivery order, to receive the item (s) ordered for the purpose for which ordered, and to use any preference rating or allotment number or symbol which the undersigned has placed on this order."

Canadian firms may not use the alternative form of certification provided in CMP Regulation No. 7.

The amendment permits the United States Army and Navy to use the MRO procedures to obtain maintenance, repair and operating supplies for plants owned and operated by them to the extent that such plants are engaged in the production of products or are engaged in businesses listed in Schedules I or II of the Regulation as revised.

Preference Ratings Govern

The Amendment provides that when any Order in the E, L, or M series assigns a specific preference rating to the delivery of any particular material to be used by a particular industry or for a specified purpose, such rating shall control, and the preference ratings assigned in CMP Regulation 5 may not be used. For example, Order M-41 assigns a rating of A-10 to deliveries of chlorinated hydrocarbon solvents for use in the fumigation of stored products, including grain. A person who needs a chlorinated hydrocarbon solvent for such purpose, may apply a rating of A-10 to its delivery, and must not apply a rating assigned under CMP Regulation 5.

Attention is called to the fact that certain provisions and restrictions contained in P Orders, including definitions, requirements for making applications and filing reports, and others, are retained in force under the amendment.

In a case where application has been filed with the War Production Board for reclassification of an industry in the Schedules of CMP Regulation 5, the War Production Board may (1) list such activity in either Schedule I or II or, (2) in special cases permit the appliant to operate under the Regulation to the same extent as though his business activity were included in one of the Schedules.

The amendment makes it clear that ratings and allotment symbols assigned under the Regulation must not be applied to deliveries of items appearing on List A, regardless of whether or not such items are required for maintenance, repair or operating supplies.

New Items Included

List A is modified to permit the use of MRO ratings to obtain carbon paper, tracing paper, reproduction paper, sensitized paper, engineering graph paper and chemically treated paper for engineering use. The prohibition is broadened to ban the use of MRO ratings to obtain products whose uses are prohibited, or for which applications are required under M, L, or E Orders including, for example, office machinery, office equipment, new floor finishing machinery, floor maintenance machinery, industrial vacuum cleaning machinery, boilers, laboratory equipment, laundry and dry cleaning equipment, etc. New items added to List A are:

(1) Medical, sugical and dental equipment or supplies (exclusive of parts for maintenance or repair), except for use on shipboard. The particular items covered are listed in the Regulation.
(2) Fire protective equipment as defined in Order L-39, except for use on shipboard.
(3) Signal or alarm equipment as defined in Order L-39.
(4) Any device, equipment, instrument, or other material designed or adapted for use in connection with (i) air warnings or detection of the presence of enemy aircraft; (ii) blackouts or dimouts; or (iii) the protection of civilians either individually or collectively against enemy attack.
(5) Anti-freeze as defined in Order L-51.

Attention is also called to the fact that List A has now been incorporated in Priorities Regulation No. 3.

The amendment makes it clear that provisions of Regulation 5 do not apply to governmental agencies (other than Claimant Agencies) or to institutions as they are defined in CMP Regulation No. 5 A.

Cooperation Is Essential

Every person requiring maintenance, repair, or operating supplies should carefully study the provisions of the regulation.

Schedules I and II should be carefully studied to determine whether the individual business is eligible to obtain controlled materials. Careful study should also be made to ascertain the particular rating applicable to the specific enterprise.

Manufacturers cannot be urged too strongly to exercise care in the application of the MRO ratings. Each operator should attempt to secure materials without the use of preference ratings or MRO devices, if possible. In addition, each operator should do everything possible to use the MRO procedures properly.

However, it is also imperative that existing facilities and equipment should be maintained in proper working order. Maintenance is an important part of every plant's war production activities. In addition, repairs should be made promptly in the case of breakdowns in order that available productive facilities may be continued in proper working order, and that the over-all amount of such facilities and equipment shall not be dissipated.

Many industries are required to place heavy strains on their equipment because of high productive rates required today. For this reason, the proper well considered use of MRO procedures is important.

"FUNCTIONAL DESIGN" for FORMS TOO!

By

JOHN J. O'ROURKE

Pacific Manifolding Book Co., Inc.

WAR demands are introducing a lot of new techniques into purchasing practices these days. Paper work, for one thing, is being made a good deal simpler than it used to be—and a good deal more complete.

That doesn't mean that we are doing less paper work. Quite the contrary, we are doing more than we ever did before. Increasing government requirements, plus our own complicated production techniques, have made for immeasurable increases in our already considerable volume of record work. Beyond these two sources, in varying degrees, present economic conditions, shortages, rationing, stepped-up production, plant expansion, delivery problems and a multitude of local conditions are among other factors which combine to make the Purchasing Agent's lot a not-so-happy one.

What the change in paper work represents is not so much a falling off of paper work as a *directing* of it; a departmentalizing, if you will, within the department itself. Where we formerly tried to control procedures with an often inadequate purchasing order alone, we now use the purchasing order (designed, generally on the basis of the National Association of Purchasing Agents' Zone plan), as a master control over a series of forms created to do a specialized job *and to do that job only*. In other words, our forms now have what our architect friends like to call "functional design." This is as revolutionary a step as assembly line technique was over ancient construction methods.

Too Many Forms?

The danger now is that we may adopt too many of them, and find ourselves snowed under by flurries of forms. A recent survey conducted by systems engineers of the Pacific Manifolding Book Company showed more than forty "miscellaneous" forms being used in some purchasing departments!

Doubtless every one of these forms had a definite purpose, or we may assume it would not have been installed. Certainly there is a real need for supplementary forms in purchasing. There can be no argument about that. For instance, most large organizations—and a good many small ones—would suffer serious loss of control without their purchase requisitions. And it would be impossible to clear invoices intelligently without adequate receiving records.

Supplementary Data

Under present conditions, the request for information, request for quotation and tabulation of bids are three prior forms most firms must use. Then there are additions to purchase orders which were complicating buying long before the war came along to complicate it still further. Can we count on complete understanding and adequate transmission of details if we telephone additions? Or what if telephoning is not feasible? Are additions so few that a specially typed letter can be used in each case?

What about issuing a complete new order? These are a few of the questions that have been buzzing through association meetings for years without running into a satisfactory answer. Perhaps there is no such thing as a completely satisfactory answer, but some firms report that special forms for additions are working out rather well for them.

There is a whole host of forms built around acceptance or rejection of merchandise, too. The inspection report of course is number one. It is commonly supplemented by the charge back, damage report, material rejection and request for adjustment, among a number of others. A number of copies of each of these forms is obviously necessary, so that any combination of one or more of them will save considerable handling and considerable writing. No matter how forms are designed, that ubiquitous trio, OS&D (over, short and damage), still spells trouble—and extra paper work—for buyers of every kind.

Even the purchase order itself has been "expanded". Separate purchase orders are used in some industries for ordinary purchases, petty purchases, local orders, pick-ups and employees' purchases. A confirming order form and a purchase contract are also popular in some industries. In design, these forms vary within a single house, from simple post card to a ten-part speediset. Add to these a purchase record, which is usually a visible index card on which vendors, specifications, costs and consumption data are kept, and there is plenty of paper work, without *extra* forms! So far we have talked about the three major buying forms—purchase requisitions, the purchase order itself, and the receiving record. That leaves the forty miscellaneous forms to go, and the question of how to cut down on the number of forms which may be called indispensable to smooth operation.

Miscellaneous Forms

The first thing to remember about the "miscellaneous forms" uncovered by the survey of the Pacific Manifolding Book Company's systems engineers is that they are nothing more than a checklist for most purchasing people; we don't need all of them. The second thing to remember is that we probably do need *some* of them. After all, the purpose of forms is to simplify the procedure in which they are used. If any form does that without causing losses which may offset its usefulness, it is a good form. It doesn't make any difference if it is the forty-first purchasing form you have installed. Granted that the others are just as useful, you *need* forty-one forms, and that's all there is to it.

Most likely, however, you can cut down on the number of *separate* forms you now use. The first step in doing that is to examine exactly what functions your forms must perform. You know pretty well how your own forms fit into the picture of the three primary purchasing instruments. We want now to glance briefly at that imposing list labelled "miscellaneous."

Some miscellaneous forms have been mentioned under the primary instruments. In addition to those, a service request, a purchase requisition transportation request, a request for delivery date and a standard specification sheet are sometimes used.

Supplementing the receiving record, maybe a receiving ticket, receiving voucher, scale ticket material receipt, receiving receipt and merchandise received report.

Claims against vendors or carriers may be made by means of freight claims, damage and shortage claims, charge backs, requests for adjustment and a variety of rejection slips. To avoid misunderstandings with suppliers, an official cancellation notice or a special form to provide authorization to change specifications on original orders may complement blueprints or specification sheets. Slow suppliers are prodded by follow-up requests for acceptance, and by expediters, who are directed through purchasing records, and who report, sometimes on special forms, to both production and purchasing departments.

ASK YOURSELF THESE QUESTIONS:

What is this form intended to do?
How is it used, and by whom?
Is it necessary?
Is the information otherwise available?
Is the information presented in the most usable way?
How is it correlated with other forms?
Can it be combined with some other forms?
What changes would be necessary to make it serve an additional function?
Will an extra carbon copy eliminate some other form?

Inside the organization the centralized purchasing department will be responsible for stock department requisitions on the purchasing unit want lists, non-productive requisitions, supply, and repair and maintenance requisitions.

Combining Forms

That is a rough idea of the sort of thing that is happening to us today, and is likely to go on happening. There is no need to mention the numerous copies of each of these forms which must be supplied to various departments, individuals and government officials and agencies. The importance of these is being thoroughly emphasized for anyone who is dealing in war work, and who isn't in one way or another?

Now, what can be done about it? A number of methods suggest themselves, but they all come back to the fundamental principle of combination. It goes without saying that if a number of records can be written at one time on a single form, paper work will be immensely simplified. Most firms are adopting this means of reducing paper work.

In using the combination method of keeping multiple records for various departments, a few Purchas Agents I know have expressed reluctance to include a large number of functions on their orders, for fear of complicating their procedure too greatly. Of course, this objection is quite valid when the number of functions has become so large that it takes a layout genius to cram them into an unusually large number of sheets. Common sense must dictate a reasonable stopping point. That need not mean that the whole idea of combining functions must be thrown overboard. Too large a number of odd-sized separate forms constitutes an equally serious hindrance. An intensified combination gives the Purchasing Agent "one-glance" control, simplifies his reordering of forms and helps to standardize his entire purchasing procedure on an intelligent, flexible basis.

A few large midwestern industries have been using an ingenious request for quotation or inquiry form which can be converted into an actual purchase order simply by checking a designated square. Dangers of misunderstanding or error seem augmented by this method, but the idea is working satisfactorily on a fairly large scale, not only in this connection but to differentiate between various types of purchase orders.

THE FIRST STEP IN FORM DESIGN IS TO ANALYZE THE FUNCTION

Requisition
Stock requisition
Non-productive requisition
Supply, repair and maintenance requisition
Want list
Withdrawal form
Request for information
Request for quotation
Tabulation of bids
Purchase order
Local purchase order
Pick-up order
Petty purchase
Employee's purchase
Confirming order
Purchase contract
Addition to order
Change order
Standard specification sheet
Authorization to change specification
Acknowledgment
Numerical order file
Tickler system
Follow-up copy
Expediter's report
Service request
Traffic requisition
Request for delivery information
Cancellation notice
Receiving record
Receiving ticket
Receiving voucher
Scale ticket
Material receipt
Merchandise received report
Inspection report
Damage report
Material rejection
Request for adjustment
Charge back
Freight claim
Damage and shortage claim
Accounting information

The function may be essential. A separate form may not be necessary.

To some purchasing men this may seem an extreme in combining, but a northwestern contractor has carried it in another direction and made a tabulation of bids to combine with his purchase requisition. This plan provides complete information and authorization on the purchase, and is a splended device for government contractors who must have a certain number of bids on each of their many purchases.

Requisitions are being used as "withdrawal forms", supply, and repair and maintenance requisitions in many industries where the accounting department has set up budget controls for these items. This relatively simple procedure can be completely effective only if stores departments are under the jurisdiction of the Purchasing Agent. In practice, it multiplies efficiency and eliminates unnecessary "special" forms.

Using Extra Copies

A quite considerable number of the forms revolving around the purchase order can be combined with the order itself without prejudice to either its general utility or the ease with which it may be handled. For instance, the all-important acknowledgment copy is now included as a matter of general practise by most industries. There was a time when acknowledgments either were waived or were made by venders by means of letters or their own forms —which was sometimes equivalent to "waiving" them! In these times if we want to be sure of obtaining merchandise and timely delivery, it is almost imperative that we use acknowledgments. Return postcards to go with the original order, an extra copy of the purchase order itself, carrying instructions to return it within a given period, perforated sections on the original order to be signed and returned by the vendor —all of these devices have been used with huge success to secure acceptances, acknowledgments and promise of delivery.

The expanding volume of purchase orders has made necessary the addition of still another copy which may or may not have been included before the war. Purchasing departments with suddenly overflowing files or simply with a large volume of work, were losing track of orders through misfiling or changes of name or other changes. The result: an extra, numerical file and an extra copy of the purchase order. Other advantages of the numerical file include its freedom from attached papers, such as requisitions, invoices and correspondence, and its consequent lack of bulk which makes it easier to file and easier to use as an instrument for posting to the purchase record.

Another major function of the purchase order is to secure delivery. But even when delivery dates are stated some doubt remains as to whether the reference is to shipping or arrival. That difference can be crucial. About a year ago one Wisconsin company began to write the shipping date on its orders, consciously allowing a week's leeway for travelling time and a two-week period before the merchandise was actually needed. Of course that will not help when goods are needed NOW. But in emergency situations, no Purchasing Agent in the country is going to wait on form anyway. He is going to pick up his telephone or he is going to dash off a blistering hot wire. If that won't work, he will have expediters hounding the supplier until he gets what he wants. In general, delivery *methods* should also be specified wherever possible to secure lowest transportation costs and best routing.

Internal accounting information is also being included on many purchase orders, providing complete records of the purchase and simplifying the work of the accounting department at the same time. Indeed, this is one of the major functions of the purchase order. Whether you use detachable perforated strips or extended sheets, special sections or the back of some copies for this information, it is worse to get it on the order in some manner.

Paper Has Two Sides

The backs of certain copies can also be used for other vital purposes. Instructions and terms and conditions appear regularly on the reverse side of the vendor's copy of many concerns, although the vast majority try to condense terms and conditions to a standard three lines on the face of the form. Where they do appear on the back of the vendor's copy, smart practise is to have them printed on the back of at least one office copy also. This will give the form a measure of legal protection. A data arrangement with a record of follow-up is appearing on the back of many Purchasing

(Continued on page 236)

PURCHASING FOR EXPORT

If you are buying materials for shipment to some foreign country, it will be wise to familiarize yourself with technical standards of measurement, the intricacies of quota allocations and export regulations, and the significance of traffic terms

By

GEORGE KENDE

Amitas, Ltd.

IN times like these the consumer abroad needs no fancy products. Less exposed to high pressure sales promotion, his is a down-to-earth approach. He remembers well the story of the old and entirely fictitious wine merchant who whispered this secret on his death-bed to his son: "You can make wine also out of grapes."

Take for instance our European customers. They need wheat today, farm tractors tomorrow and steam turbines when things settle down after the war. Their consumption pattern has always been a lot different. Their sugar is made from beet and not from cane. The gasoline to drive their vehicles is sometimes alcohol, sometimes generator gas. They are not indifferent to waste and would hardly ever indulge in it for the purpose of boosting consumption. They like their bread brown rather than white because they are after health values rather than some imaginary "class distinction" between eaters of white bread and those who can afford to buy brown bread only.

The general level of "technical literacy" may be lower yet their restricted conditions give rise to incentive and ingenuity and to a natural tendency to simplification and efficiency.

Different Standards

There is also a wide difference in quality specifications, standards and measurements. To know the difference between kilogram and pound, centimeter and inch is not enough, as you have discovered already in handling South American business. Get some good conversion tables on the International Metric System. Do not blame them much for their logical decimal system, better watch out not to confuse U. S. gallons (equal to 3.785 liters) with Imperial gallons of our British friends (equal to 4.545 liters), and try to comprehend that one British Thermal Unit

Excerpts from a paper read at Columbia University's Department of Training in International Administration.

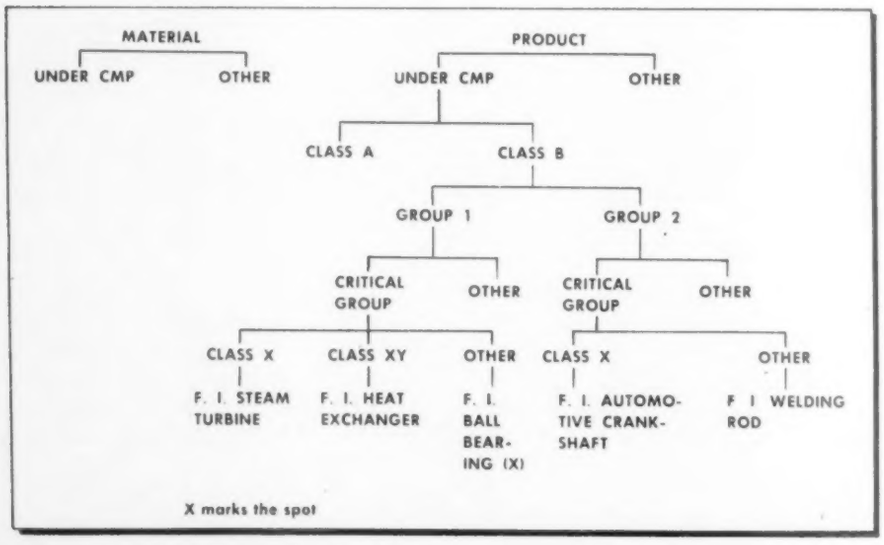


Figure 1

The genealogy of a ball bearing, for purposes of getting a priority rating.

★

equals 778.3 foot-pounds also 252.2 calories and .000293 kilowatt-hours, too.

Also learn patiently that if you are expected to buy say steel wire of 2.5 millimeter diameter, you have to look into tables to find out which "Wire Gauge" will do. You may wish to pick #12 Gauge which is AWG means .081" but in BWG .109", a mere 34% difference. And if a 1½ millimeter thick steel sheet is needed, you will quickly learn that it is not sold by the inch but also by a this time different gauge. You will be happy to discover that the equivalent of your size is the #16 Gauge, but not because this happens to be 1/16" thick, for again #10 Gauge is of course not 1/10" but about 1/7".

Keep calm and discourage your client to give you specifications of various European engineering societies and standardization committees. Remind them of Goethe's word to: "Measure everything that is measurable and try to make measurable that which isn't yet". If you get specifications expressed in concrete figures you will be able to determine easily what the nearest equivalent American Standard is.

Starting the Purchase

This requisition will come to you through the OFRRO or LL who will help you to process the export license application in cooperation with the BEW. If the material wanted covers a civilian demand you have to have some kind of import recommendation or quota allocation from the originating country, in line with trade agreements or "decentralization plans" concluded with our Government.

And then, do you think you know everything about priorities? Did you ever try to trace down the genealogy of a ball bearing? Well, take a glance at Figure 1, which shows the main trunk of the family tree, side branches duly neglected.

The only time you will have to bother about CMP is when you apply for an allotment for controlled materials, i.e., on Iron and Steel, Copper, Aluminum. It is unlikely that Class A products will come into the picture and Class B products for export are handled on a simple priority basis.

Securing Clearance

As it will be unwise to place an order before the necessary licenses are secured, the status of license applications has to be watched carefully and followed up vigorously. You will find records like the one shown in Figure 2 very useful.

All you need is to enter a few figures, dates, actions taken and the entire story is at your finger tips.

Then comes the well known period of strain, with an air of expectancy; how closely will delivery promises approach actual shipping dates? Expediting—as it is called—and friendly "vendor relations" will perform more than fist shaking and dark thoughts whether your opponent qualifies as a gentleman or if he keeps his business promises in a varying degree.

Problems of Storage

A few weeks before material is ready at the supplier's place you will have to get shipping permit to move it not only outside the continental U. S. A. but also in the inland between the supplier's place and port of exit. While you wait for the shipping permit the supplier may get fed up with cluttering up his storage place with your merchandise and then you will learn the intricacies of what is an "intermediate storage".

Pretty soon you will learn that an FOB quotation will cost you a lot more than FAS because in the former case supplier pays the freight to the railroad station of the port of exit whereas FAS means "free alongside ship", i.e., delivered to the dock. The funny part of it is that in the original concept FOB meant "free on board" i.e., more than just alongside the ship.

Make sure that the supplier's invoice contains the assurance that he adhered to the applicable price regulations. OPA would be the last one to neglect export business and their ideas are pertly expressed in the "second maximum export price regulation" effective April 5, 1943 which clearly distinguishes between "export sales to procurement agencies of the U. S. for the account of the Office of Lend-Lease Administration" and "sales to exporters".

Some More Pitfalls

Of course you make sure in due time that the consignee or the agency acting on its behalf satisfactorily settled the question of payment, what with Federal Reserve Bank regulations, foreign exchange rates, varying with the kind of commodity, official and free market rates and the like.

Insurance will also have to be attended to, with such details as "frustration insurance" or different premia for war risk insurance dependent upon who gives you the policy. Wish your shipment "good sailing" so that you will have as little as possible to do with "average" adjustment which word means other than its face value. It means "havarie" that is loss and damage of insured cargo.

If, after observing the hundred and one details and viewpoints that go into a domestic purchase transaction, you also negotiated all the above hurdles, you have done a man's job.

★

January	February	March	April	May	June	July	August	September	October	November	December

Material _____ Comm. # _____ Order _____

CMP _____ C.N. or I.R.# _____ Date _____

License		Export License		Priority and/or Allotment	
	Date applied for				
	Follow up dates				
	Case # and date				
	Granted	date #		rating #	
	Accepted by supplier	expires			
	Rejected - reason				
	Appeal - reason				
	Not Granted	BEW	We	WPB	We
	Status and date (R. RWA or A)				

Figure 2

A useful form for keeping track of the status of license applications.

NEW WAREHOUSING PROGRAM

Distribution of critical alloy steels for aircraft manufacture is streamlined to meet emergency needs and to avoid delays

THE new enlarged aircraft steel warehousing program announced by the Steel Division of the War Production Board offers new hope to aircraft manufacturers. For the new plan contains four important changes that will solve many a critical shortage, forestall production delays caused by lack of material.

The four new changes are:

1. An increase in the quantity of steels carried by the warehouses. This increase has been as much as five times the amount previously carried.
2. The amount of material which the warehouse may ship in a given period has been changed from a quarterly to a monthly basis.
3. Aircraft manufacturers may issue blanket certificates to cover all future orders on warehouses.
4. Number of warehouses has been increased from 16 to 26.

The new program will be controlled by the Aircraft Scheduling Unit which consists of Colonel E. M. Powers, the Army Air Forces Representative and Administrator of the Unit; Captain C. H. Gillilan (SC) U. S. N., Bureau of Aeronautics Representative; and Colonel Wm. S. Cave, British Representative. The detailed operations will be handled by Captain A. F. Hitchiner operating under the supervision of Major A. M. Baehr, Chief, Materials Coordinator Unit, and Lt. Colonel A. E. R. Peterka, Chief of the Material Distribution Branch. This is a branch of the Production Resources Section headed by Colonel E. W. Rawlings, which carries on part of the operations for the Aircraft Scheduling Unit.

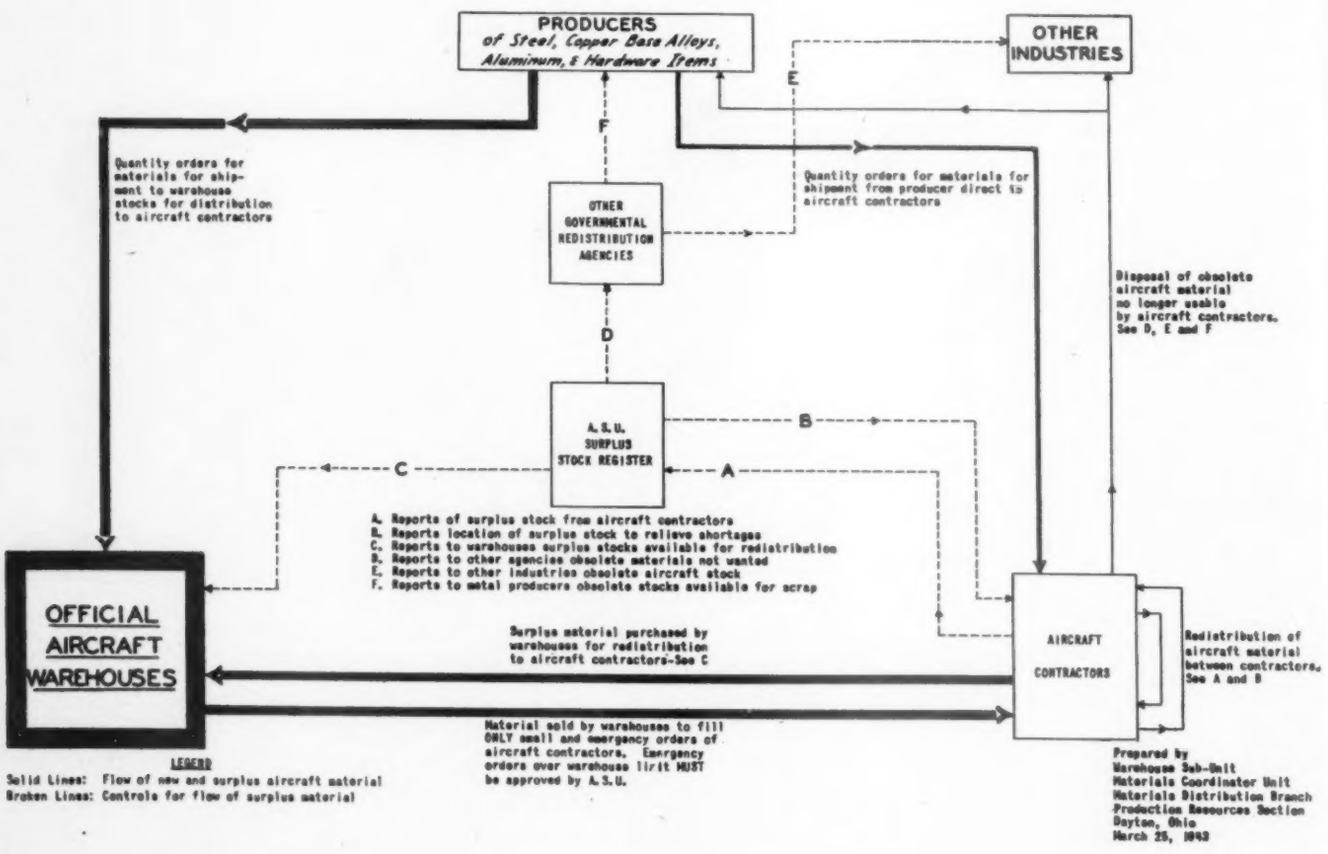
Serves Emergency Needs

Briefly, the purpose of the program is to supply aircraft manufacturers with both their small and emergency requirements of critical aircraft alloy steels. It will also serve in redistributing surplus alloy steels which may accumulate in the plants of aircraft manufacturers.

The accompanying chart illustrates graphically the procedure followed in this new plan.

The warehouses are located in 26 cities in 11 states and were chosen by the aircraft industry itself. All of these warehouses have had extensive experience in aircraft steels and the majority have their own metallurgical staffs.

In general, only standard aircraft alloy steels will be earmarked in these warehouses but special provisions have been made to stock one warehouse with certain "Non-Standard" sizes and grades which are used by the industry in quantities too small for mill production. If a manufacturer is unable to secure a non-standard item in this warehouse he should immediately notify the Army Air Forces or Bureau of Aeronautics representative in his Procurement District Office and request their assistance. If the District Office approves this request of a non-standard specification, it will forward its recommendation to the Aircraft Scheduling Unit in Dayton, which will ar-


PRODUCERS
of Steel, Copper Base Alloys, Aluminum, & Hardware Items
OTHER INDUSTRIES
E
F
Quantity orders for materials for shipment to warehouse stocks for distribution to aircraft contractors
OTHER GOVERNMENTAL REDISTRIBUTION AGENCIES
Quantity orders for materials for shipment from producer direct to aircraft contractors
Disposal of obsolete aircraft material no longer usable by aircraft contractors. See D, E and F
D
A. S. U. SURPLUS STOCK REGISTER
B
C
A
A. Reports of surplus stock from aircraft contractors
B. Reports location of surplus stock to relieve shortages
C. Reports to warehouses surplus stocks available for redistribution
D. Reports to other agencies obsolete materials not wanted
E. Reports to other industries obsolete aircraft stock
F. Reports to metal producers obsolete stocks available for scrap
OFFICIAL AIRCRAFT WAREHOUSES
Surplus material purchased by warehouses for redistribution to aircraft contractors-See C
AIRCRAFT CONTRACTORS
Redistribution of aircraft material between contractors. See A and B
Material sold by warehouses to fill ONLY small and emergency orders of aircraft contractors. Emergency orders over warehouse limit MUST be approved by A. S. U.
LEGEND
Solid Lines: Flow of new and surplus aircraft material
Broken Lines: Controls for flow of surplus material
Prepared by
Warehouse Sub-Unit
Materials Coordinator Unit
Materials Distribution Branch
Production Resources Section
Dayton, Ohio
March 25, 1943

FOR AIRCRAFT STEELS

range for the production of a minimum mill quantity. The amount required by the manufacturer will then be shipped to him and the balance placed in the warehouse stock. The production of non-standard items will be approved only in very exceptional cases and manufacturers will do well to explore the use of all available stocks.

Both welded and seamless steel tubing will be carried by the warehouses but since seamless tubing production facilities are extremely limited, manufacturers should make full use of welded tubing and avoid requesting more critical items.

For Aircraft Only

The material stocked in these warehouses is restricted for use inside the Continental United States except in two special cases where it may be used in the Dominion of Canada.

These earmarked aircraft steels may be used ONLY for aircraft construction, maintenance, repair, and airborne parts including the airframe, engine, propellor, accessories and any other regular equipment for the airplane. These steels may NOT be used for jigs, fixtures, or ordinary ground equipment, whether or not this equipment might be flown to an advance base.

Warehouses may release these aircraft steels in only three ways:

1. Directly to the manufacturers of the approved parts.
2. To modification centers, and Army and Navy supply depots.
3. For the maintenance or repair of aircraft and airborne equipment.

Procedure for obtaining steel from the warehouse is quite simple. The manufacturer will place his order with the nearest warehouse and if the material is not available in this particular warehouse he may notify the Aircraft Scheduling Unit, which will try to locate the material in one of the other designated warehouses. If the steel is not stocked by any of the 26 warehouses but has been ordered by one of them—and if the need for this steel can be classed as an emergency — the manufacturer should obtain proper certification from his Procurement District Office. The Aircraft Scheduling Unit will then order the warehouse which is to receive the steel to ship the required amount to the manufacturer even though the warehouse has accepted predated orders for this same steel.

Quantities and Deliveries

In the scheduling of his production the manufacturer must remember that in any calendar month he

(Continued on page 238)

OFFICIAL AIRCRAFT STEEL WAREHOUSES:

1. Aircraft Steel & Supply Co.
   415 N. Water Street
   Wichita, Kansas
2. Baker Steel & Tube Co.
   955 S. Alameda Street
   Los Angeles, California
3. Columbia Steel Company
   Seattle, Washington
4. Crucible Steel Company
   Halcomb Warehouse
   State Fair Boulevard
   Syracuse, New York
5. Ducommun Metals & Supply Co.
   4890 S. Alameda Street
   Los Angeles, California
6. Edgcomb Steel Company
   430 Hillside Avenue
   Hillside, New Jersey
7. Peter A. Frasse & Co., Inc.
   17 Grand Street
   New York, N. Y.
8. Peter A. Frasse & Co., Inc.
   3921 Wissachickon Ave.
   Philadelphia, Pa.
9. Garrett Supply Company
   3944 Santa Fe Avenue
   Los Angeles, California
10. Hamilton Steel Company
    Taft Avenue
    Cleveland, Ohio
11. Earle M. Jorgensen Co.
    5311 Clinton Drive
    Houston, Texas
12. Earle M. Jorgensen Co.
    10510 S. Alameda Street
    Los Angeles, California
13. Metal Goods Corporation
    16 Drennan St.
    Houston, Texas
14. Metal Goods Corporation
    5239 Brown Avenue
    St. Louis, Missouri
15. Miller Steel Company
    49 Empire Street
    Newark, New Jersey
16. Joseph T. Ryerson & Son, Inc.
    Rockwell Street
    Chicago, Illinois
17. Joseph T. Ryerson & Son, Inc.
    Front Street
    Cincinnati, Ohio
18. Joseph T. Ryerson & Son, Inc.
    5 Clinton St.
    St. Louis, Missouri
19. Joseph T. Ryerson & Son, Inc.
    203 Westside Ave.
    Jersey City, New Jersey
20. S.A.E. Steel Company
    1420 East 47th Street
    Cleveland, Ohio
21. Service Steel Company
    1435 Franklin Street
    Detroit, Michigan
22. U. S. Steel Supply Company
    1319 Wabansia Avenue
    Chicago, Illinois
23. Wheelock-Lovejoy Company
    288 Court Street
    Buffalo, New York
24. Wheelock-Lovejoy Company
    3201 Bellevue Ave.
    Detroit, Michigan
25. Chicago Steel Service Company
    39th and Ashland Ave.
    Chicago, Illinois.
26. Aircraft Steel & Supply Co.
    Dallas, Texas

PROCUREMENT DISTRICT OFFICES ARMY AIR FORCES

(Bureau of Aeronautics' Representatives are also located in these offices)

District Supervisor
Eastern Procurement District
AAF Materiel Command
11th Floor, 67 Broad Street
New York, New York

District Supervisor
Midwestern Procurement District
AAF Materiel Command
Municipal Airport, P. O. Box 117
Wichita, Kansas

District Supervisor
Central Procurement District
AAF Materiel Command
8505 West Warren Ave.
Detroit, Michigan

District Supervisor,
Western Procurement District
AAF Materiel Command
3636 Beverly Boulevard
Los Angeles, California

WHAT DO YOU KNOW ABOUT MATERIALS HANDLING?

By

HERBERT W. NEFF

Purchasing Agent,
Towmotor Corporation

I WISH I could hear the answers to that question. For, if past experience is any indication, it's a safe bet that they would range all the way from long, authoritative replies to a brief "Very little. And why should I know more?"

Such a variance would not arise alone from the fact that the question was put to Purchasing Agents representing every type of industry. Primarily responsible would be the subject matter: materials handling. For here is a topic that anyone in industry is either keenly aware of . . . or else barely recognized as a factor in production and distribution.

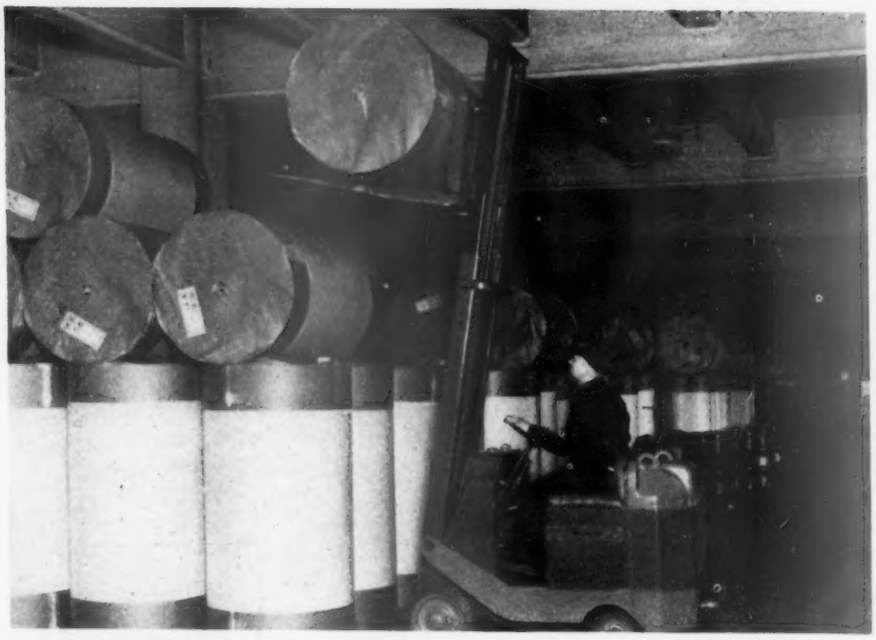
It is not strange that such should be the case. Some manufacturers have had to attain greater-than-ever-before production almost overnight. They have had to seek out new sources of efficiency contributing primarily to increased speed of output. They have "discovered" materials handling, investigated it thoroughly as it applies to their problems, and made intensive and extensive installations. In this process, all key department heads . . . including the Purchasing Agent . . . have become completely familiar with the "who, what, when, where, why and how" of materials handling. Yes, it affects operations of many departments, in many ways.

Other manufacturers and their department heads have been introduced to materials handling from an entirely different angle . . . that of cutting costs. Decreased production, less raw material, less manpower, less storage space . . . these have been their problems. They, too, have "discovered" materials handling . . . but inasmuch as their operations have been largely dependent upon priorities, they have been unable to obtain the equipment needed to make full use of that knowledge.

Finally, there are many manufacturers who for greatly varying reasons have not yet "discovered" materials handling. Their business may be at a peak, or it may be in a valley. But regardless of production conditions they have not yet explored the present or future possibilities inherent in materials handling operations . . . hence throughout their organizations there is little appreciation of the opportunities that exist in better methods of moving materials.

It is from Purchasing Agents in this last category of manufacturers that I would expect a "Very little. And why should I know more?" answer to my original question, "What do you know about materials handling?" Even though you are

An eastern manufacturer cut unloading costs $7.89 per 40-ton carload of steel wire. Inefficient handling here might wipe out any hard-won saving effected by prudent purchasing. (Left)



The size and shape of load units may determine the price of purchase . . . but your plant must be equipped to take advantage of any saving through proper handling facilities.

not one of them, it may pay you to review your general materials handling information and check it against the facts I set down in reply to that "Why should I?" query.

Materials handling operations affect the Purchasing Agent and his activities in many ways. Actually, although he may not realize it, materials handling may normally be the largest single factor influencing the Purchasing Agent's buying. By that I mean that from 25 to 35% of the cost of the average product can be attributed directly to materials handling. Obviously, the supplier whose materials handling operations are efficient will be able to quote a better price than one whose other manufacturing costs are in line but whose final cost is "upped" by costly, wasteful handling. Of course it is an indirect benefit . . . but a Purchasing Agent is often able to make a considerable saving because a supplier decreases the cost of moving, loading, storing and stacking raw materials, parts-in-process and finished goods. Moreover, that saving can be protected to the overall benefit of the Agent's management if proper provisions are made at the receiving end for efficient unloading and storing. On the other hand, the hard-won savings of a Purchasing Agent can literally be wiped out overnight by slow, wasteful and expensive materials handling.

Large volume purchases at any particular time may be warranted by price conditions . . . provided your materials handling system can answer the storage problem.

Another indirect benefit of efficient materials handling, from the Purchasing Agent's viewpoint, grows out of delivery schedules. Those parts you've been calling for so desperately will arrive much sooner if your supplier's production flow is kept free of jam-ups by well-coordinated materials handling . . . or if the supplying warehouse has equipment and methods for speeding loading . . . or if your own plant can save time in getting them unloaded and into the plant. In the latter instance, the question of delivery is closely allied with cost, too . . . for if your plant is properly equipped with handling equipment, large savings can be effected by specifying that merchandise be packed for delivery in large unit loads. In short, the Purchasing Agent can make profitable use of his authority to specify how merchandise should be packed, provided his plant can handle incoming shipments which are packed for maximum economy.

Conversion has meant purchase of many "strange" sizes and shapes . . . all of which must be handled.

As it affects price and delivery, efficient materials handling benefits

the Purchasing Agent more generally, as one of many department heads whose contributions to the production picture grow out of cooperative effort. However, it also benefits him specifically, as a direct aid to the execution of his functions.

Concrete examples of this are plentiful in our "experience file." For instance, we had sold several pieces of equipment to a steel producer, who found that the ability of the equipment to pick up loads as heavy as 10,000 pounds, move them as fast as 880 feet a minute and stack them as high as 25 feet was of tremendous help in reducing materials handling costs and making production more efficient. One operation which previously took much time and manpower was that of loading freight cars. However, with modern handling equipment one man could load bigger units and in less time . . . so naturally the manufacturer was soon shipping certain types of steel, where the size of the unit load made no difference in his customer's production, in bigger "bundles." In other words, the material was the same and quality was identical . . . but the steel was being shipped out in bigger, heavier pieces. A short time after this practice was put into operation, the steel producer received a call from a Purchasing Agent, whose complaint went something like this: "Man, we can't use this steel . . . because we can't handle it in unloading and storage. Our men can't lift such large unit loads and haul them on their hand trucks . . . they're too heavy and too bulky. How in the world do you handle them, anyway?" An explanation followed. As a result, that particular Purchasing Agent soon ordered desired equipment, because it was evident that the efficiencies of handling bigger, heavier unit loads were not only to be made in unloading incoming shipments, but could also be effected in production, storage and loading of outgoing shipments.

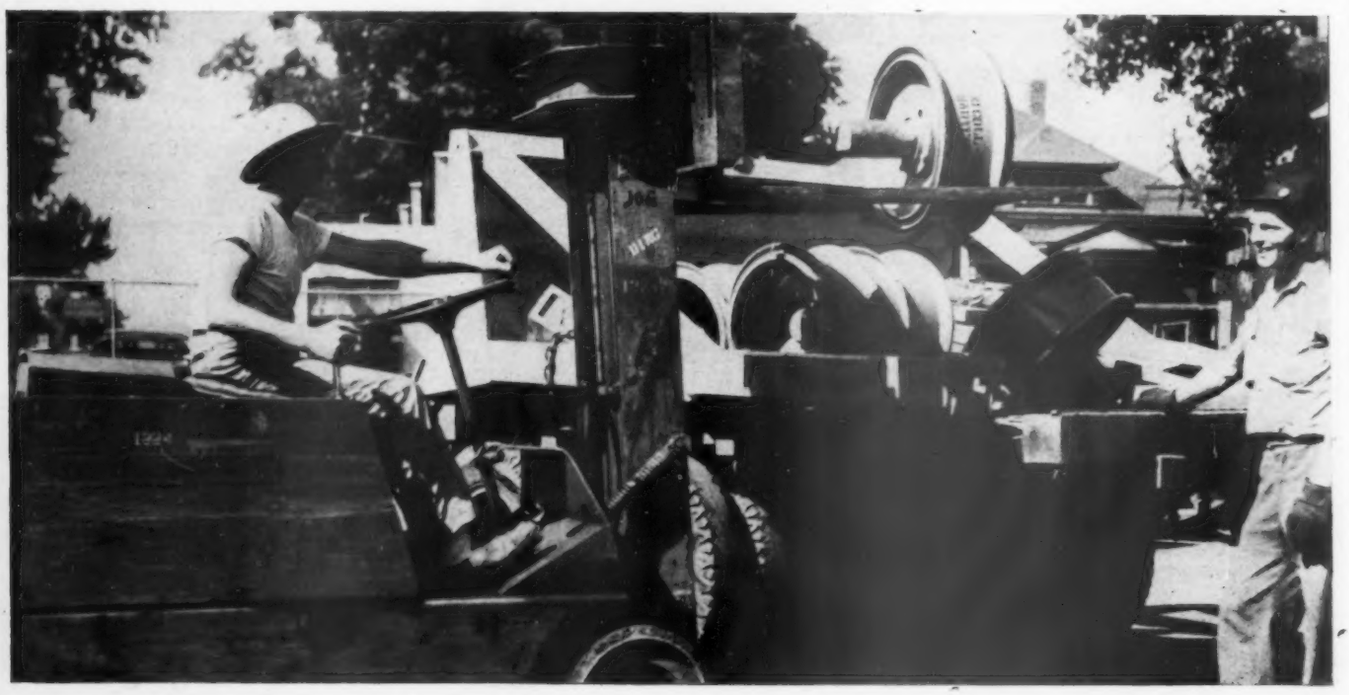
In this instance, I repeat, a new method of materials handling was of specific benefit to the Purchasing Agent because it gave him greater flexibility. Size, shape, and weight too frequently put physical limitations on a Purchasing Agent's ability to obtain the supplies he seeks in economical lots. He has much greater leeway when his own plant has a materials handling system which can efficiently accommodate his purchases . . . whether they have physical characteristics which make mechanized handling a "must" or whether they be in large volume requiring additional storage space.

That fact has been proved time and time again in past months. With many manufacturers converting plants and equipment for manufacture of entirely new war equipment, there were many incoming shipments of "strange" raw materials and parts, in an endless variety of sizes and shapes. If the manufacturer's materials handling system was sufficiently adaptable to take care of unloading these new supplies and moving them into storage or production, the "physical" aspects of purchasing presented no headaches. If it wasn't . . . well, that's how bottlenecks are born!

The fact that the right kind of a materials handling system can greatly simplify the purchasing of new types of supplies is alone sufficient reason why every Purchasing Agent will find it advantageous to investigate the subject more thoroughly. After the war there will be many new and advanced products to be manufactured. Purchasing will again have the problem of obtaining new types of materials . . . perhaps in unusual sizes and shapes, or purchased most economically in large, bulky lots. Then the Purchasing Agent who knows how and why such supplies can be handled most efficiently will have a distinct advantage.

Picking up, moving, storing and stacking materials is today proving a fertile field for management striving to balance all production and distribution factors for greatest output. It will be equally important in the future when competitive enterprise will seek to cut costs in every practical manner. As an important member of the management "cabinet" the Purchasing Agent should be ready and able to help guide and shape policies involving materials handling, both as related to his specific functions and the operation of his company as a producing unit. If we know Purchasing Agents, they will be ready to do that . . . with a working knowledge of materials handling.

Tomorrow's new products will raise problems in purchasing new and different supplies, and in handling such purchases.



CONTRACT TERMINATION
– Key to Quick Conversion

Government procurement agencies are looking ahead to prompt and equitable adjustment of war contracts to clear the way for a quick return to normal peace-time production.

By

A. N. WECKSLER

ANTICIPATING the problems which developed at the close of World War I, when differences over terms of contract settlement led to long drawn out negotiations and court action, an inter-departmental committee has been working for a year to develop a uniform basis of terminating contracts that can be adopted by all Government war procurement agencies.

Both the dollar value and number of contracts which will be in force toward the end of this year dwarf the industrial war picture of the last war

However, of greater significance is the large number of sub-contracts which currently are in force.

There is no tendency on the part of representatives of the War Production Board, War Department, Navy Department, the Maritime Commission and the Procurement Division of the Treasury—all of whom are participating in the study of contract termination policy—to anticipate a short war. On the other hand, the impact of contract cancellations without well-defined plans for quick payment of sums due industry, could seriously affect prime contractors, and endanger the financial security of sub-contractors. Further, mental reservations on the part of producers who fear their interests to be jeopardized through contract terminations could actually impede war production.

Basic Policy

The primary objectives in establishing a uniform contract termination policy are:

1. The need for a quick settlement of terminated contracts, so that in-

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Dr. Stanley F. Teele, Deputy Director of the WPB Procurement Policy Division, who is War Production Board member of the Procurement Policy Board, and chairman of the Inter-Departmental subcommittee which is drafting proposed uniform termination contract regulation. Dr. Teele was Associate Professor of Marketing at the Harvard Graduate School of Business Administration before coming to the Government service in 1941. At that time he was consultant to the then Director of Purchases Donald M. Nelson.

dustry will be in a financially liquid position to convert to civilian output. Speed is of particular importance in the case of the small subcontractors.

2. Equitable and reasonable terms of settlement to fully protect the outlay of the contractors, sub-contractors and suppliers, both as to facilities, tools and materials, plus some degree of protection of profit position with respect to the terminated contract.

3. Assurance that any contract termination policy provides proper appeal safeguard so that individual contract holders cannot be discriminated against by capricious act.

Five Million Contracts

There may be as many as five million war contracts in force at the end of this war, these contracts having been made and administered by a number of departments and agencies through many sub-divisions and by thousands of contracting officers.

The contracts were let largely through individual negotiation process, with a wide latitude in terms, taking the position of the contractor into account. Obviously, termination of contract procedure will follow a similar pattern. Factors which will be taken into consideration are the ownership of the plant involved —whether it be Government owned, privately owned and Government financed, or privately owned and privately financed.

On the basis of the common law practices which have developed in the absence of special contractual provisions, the contractor could recover from the Government, upon termination of the contract, the entire contract price less the amount saved by not being required to complete the contract. This would permit not only all costs incurred by the contractor, but all anticipated profits.

Contractual provisions which have been developed by the separate Government agencies and departments are hardly as liberal as the common law.

Adjusting Estimated Profits

Government procurement officials maintain that it is unjust to the taxpayers to pay a contractor the full profit on the uncompleted portion of a long-term contract.

Contract clauses making this policy a part of the present war procurement pattern were adopted early in the program, and developed through changes and refinement. Best known and most widely used of these clauses is that of the War Department, set forth in War Department Procurement Regulation No. 324. This termination article provides that in addition to paying the contract price for the completed items, and reimbursing the contractor for costs for the uncompleted portion, the Contracting Office is directed to:

1. Estimate the profit which would have been realized on the uncompleted portion of the contract if it had been completed;

2. Estimate the percentage of completion of the uncompleted portion of the contract; and

3. Multiply these two figures to arrive at the allowance of profit on the uncompleted portion.

Study by the Inter-Departmental Committee of the contract termination provisions of the War Department raised the objection that the apportionment of actual costs to uncompleted portion of the contract could only be accomplished through detailed cost accounting to separate out the costs incurred for the uncompleted portion from those incurred for the completed portion.

Cost Plus a Percentage

To simplify the termination procedure, the Inter-Departmental Committee suggested that reimbursement be made of all costs actually incurred, both for the completed and uncompleted portions of the contract, and that a profit allowance of a percentage of this cost be mutually agreed upon at the time the contract is executed. This policy would convert all contracts on termination to cost-plus-a-percentage contracts.

The foregoing cost-plus-a-percentage contract formula for termination was the basis for settlement in the printed draft of a proposed uniform policy which was circulated among Government procurement officials and among a selected industrial group.

This draft has been revised in the light of suggestions received, and now incorporates alternative formulas—one formula patterned after the War Department termination clause; the other retaining the cost-plus-a-percentage feature.

Contract holders would be given the choice between the two formulas. Where a contractor had completed the major portion of his contract, it would obviously be to his advantage to adopt the War Department type of formula and obtain his full contract price on the completed portion of his contract, with a small profit allowance on the uncompleted portion. In contrast, a contractor with but a small portion of the contract completed would naturally prefer to consider the costs incurred on his entire contract in arriving at a basis for profit consideration.

Clause Not Retroactive

The recent deliberations of the Inter-Departmental Committee have also led to further basic alterations in the contract termination formula. It is now planned to issue the uniform termination articles as a regulation to be incorporated by reference in all contracts. Any changes in the regulation would only be valid for those contracts concluded subsequent to the issuance of such changes. This latter is significant, in that it protects any contractor from being bound by changes in the regulation made after a contract has been entered into.

Another alteration is the provision that a board consider such contracts as cannot be successfully terminated through negotiation or by following the formulas. Under the previous draft of the termination policy statement, contracts which could not be successfully terminated were to be referred directly to the head of the Government contracting agency or department. The new approach suggests the establishment of a board which would adjudicate differences—with the head of the contracting agency as a final resort.

Current Provisions

Salient points of the current draft of the termination regulation are:

1. Complete or partial termination at the option of the Government —taking into account that there may be instances where the Government may wish to terminate a part of the contract, but not all of it.

2. Steps to be taken by the contractor upon receipt of the discontinuance of contract notice— including discontinuance of subcontracting and work as promptly as possible, but in any event within 15 days; steps to terminate subcontracts, with a detailed statement of the responsibilities of the contractor.

3. Items title of which is to be transferred to the Government, and conditions under which transfers are to take place.

4. Obligation on the part of the Government to make payment for all completed supplies as promptly as possible, with partial payments to be made as rapidly as amounts due are determined.

5. Definition of the types of costs which are to be reimbursed in settlement.

6. Deductions which the Government may make from so-called allowable costs, and specific statement of the liabilities on the part of prime contractors to sub-contractors.

7. Reservation of rights on the part of the Government, and provision that contracts may be settled in connection with other contracts of the contractor.

The Subcontractor's Position

While the broad outline of the current draft of contract termination regulation appears entirely workable insofar as the prime contractor is concerned, the major problem is the application to subcontractors. There is a provision, the purpose of which is to earmark funds paid to the prime for payment to subcontractors, after any assignments.

In addition, procedure is provided under which the subcontractor can apply directly to the Government contracting officer, who may at his discretion work out a settlement between the prime and sub. There are two specific media which have been considered for the termination of subcontracts—The first that a uniform clause be developed for all subcontracts, and the second that legislation be adopted by Congress establishing a uniform basis of settlement.

The Inter-Departmental Committee is working on a uniform clause for subcontracts, but this cannot of itself insure quick settlement of such contracts. One of the major impediments to quick settlement is the large number of subcontracts which may be held by individual manufacturers. The negotiation of termination of each of such contracts on a piece-meal basis presents obvious difficulties.

To counteract this problem, a separate contract negotiated for the termination of all other contracts held by the manufacturer is being considered. In view of the number of contracting agencies which may be involved, a uniform contract procedure acceptable to all such agencies would have to be worked out.

Prompt Action Needed

Crux of the entire problem is the need for quick termination of both prime contracts and subcontracts. Desire for quick settlement is shared by both the Government contracting agencies and industry. The lever on industry to forego excessive claims is the need for finances for continuance of its operations. At the same time, terms of settlement must take into full account the equity of industry.

One of the proposals under consideration is the income tax principle in reverse, under which companies would file claims, permitting quick payment—these claims to be reviewed and passed upon at a later time. Objection raised to such procedure has been the possibility that some companies might become insolvent in the interim period between the first settlement and final review. On this score it is the view of some Government sources that the advantages to the country and the Government of putting working capital in the hands of business promptly would outweigh any losses which might result through excessive payments to firms that become insolvent.

The quick settlement of contracts will accelerate payment to sub-contractors, but as yet no simple formula has been devised to accomplish this objective.

Any suggestions by Purchasing Agents as to how the problem of payment to subcontractors could be accelerated should be sent to Lincoln Clark, Secretary, Procurement Policy Board, War Production Board, Washington, D. C.

Demand for Materials Outruns Supply

Requirements Committee has Authorized Claimant Agencies With Approved Programs to Make Commitments up to July 1944 for Materials in Quarterly Amounts

A CONTINUING demand for materials outrunning the available supply was reflected in the third quarter allotments of Controlled Materials just completed by the Requirements Committee according to War Production Board Chairman Donald M. Nelson.

The allotments of controlled materials have been made to the fourteen claimant agencies representing military and civilian requirements, lend-lease, and other exports.

Total requests from claimant agencies amounted to more than 20,000,000 tons of carbon steel, while the estimated supply in the third quarter is slightly under 15,000,000 tons. The allotments of carbon steel made by the Requirements Committee are slightly above the estimated supply, to assure full use of all available materials and to create a pressure for reduction of inventories to an absolute minimum.

"The continued shortage of critical materials," Mr. Nelson said, "is emphasized by the fact that it was necessary to make an overall reduction of more than 23 per cent in the requests of the claimant agencies. It should be emphasized that these requests were carefully screened by each agency before presentation, and they represent only the amounts of materials which they could use effectively for war production if available. It is clear that we could utilize nearly one-third more carbon steel in the third quarter of this year than we are going to have. The situation is similar for alloy steel, copper, and aluminum, and therefore we cannot justify the use of a single pound of these materials for nonessential purposes."

The estimated third quarter supply of materials allotted by the Requirements Committee included nearly 15,000,000 tons of carbon steel, about 2,500,000 tons of alloy steel, over 1,000,000 tons of copper products, and nearly 660,000,000 pounds of aluminum. Details of the distribution of these materials to claimant agencies cannot be given for reasons of military security.

J. A. Krug, WPB Program Vice Chairman and Chairman of the Requirements Committee, pointed out that the committee has once again completed its task of making quarterly allotments of materials to claimant agencies exactly on schedule, well in advance of the period in which the allotments will be used. The various claimant agencies will now immediately begin breaking down their allotments for distribution to producers under their jurisdiction, so that the producers will also know in advance the materials they will have available during the third quarter.

Another important step announced by Mr. Krug is advance allotment for future quarters to those claimant agencies which have firm programs.

"The Requirements Committee has authorized claimant agencies with approved programs to make commitments up to July 1944, for materials in quarterly amounts equal to those allotted for the third quarter of this year," Mr. Krug said. "This puts into effect one of the basic principles of the Controlled Materials Plan, which is designed to bring about maximum production by permitting orderly scheduling months in advance."

MAINTENANCE CLEANING SUPPLIES

By

E. L. CADY

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MORE than three and one half billion pounds of detergents are sold annually in the U. S. A., under a bewildering variety of trade names, specifications, formulas and cleansing theories.

In spite of this, it would be easy to choose a small list of ingredients and of mixtures for any plant . . . perhaps six for a factory and sixteen for a hospital, if it were not for one problem.

The problem is the type of labor which does the maintenance cleaning. Clean up gang labor seldom is overly intelligent, and only in the very largest of institutions does the job of supervising this labor pay enough money to appeal to the higher types of management personnel. And supplies must be bought to fit the people who will use them as well as the conditions for which they are to be used.

How Cleaners Work

Chemical theories as to exactly how detergents accomplish their cleaning, vary widely. The classic one is that the higher the alkalinity of the solution of cleanser and water, the faster and better the cleaning. The trouble with this theory is, many of the modern detergents which are most effective for given conditions, are not alkaline at all.

In reading the dissertations on the subject, one finds such ideas as: "each particle of dirt is covered with an oil film; the detergent turns this into soap and then floats the particle away," and "each molecule of the detergent has an extra carbon atom which sticks out like a tail to grasp the oil film on the dirt particle . . . or is bitten off by the oil film thus changing the oil into something which will not cause dirt particles to cling", and "the dirt particle cannot make up its mind whether it would rather join the oil in the detergent or the water in the mix, therefore it is held between the two and thus is floated away," and others. These are points which scientists may argue about to their heart's content. The main point is that detergents do take out the dirt, and if improperly selected, mixed or used, are capable of taking out materials other than dirt.

One item which detergents can remove in an undesired fashion, is the epidermis from the hands of the clean up gang.

If it were not for the hands of employees, the detergent having the most of free alkali would be best for a great many purposes. But in actual fact, with labor as hard to get and hold as it is today, the amount of free alkali permissible in the original detergent largely depends upon the closeness with which the clean up gang will obey orders. In one large chain of office buildings, a free alkali detergent is used for the concrete floors, but no other than a supervisor is permitted to dispense the detergent. The supervisors work right along with the scrub women, and are accused of being "stingy with the companies supplies" by these believers in the good old theory that if a little is good then a lot must be better. This restrained use of the cleanser does, of course, require more elbow grease to get the same amount of work done.

Problem of Free Alkali

Soda ash, caustic soda, caustic potash and practically all free alkalies are hard on the hands, since the very nature of these materials compels them to remove oil from materials and they will take natural oils from the skin too. When the clean up gang cannot be restrained from putting too much compound into the pail, bicarbonate of soda often is included in the original detergent; the bicarbonate "modifies" the mixture to save the hands but adds nothing to cleansing power and detracts from rinsing qualities.

Colors are affected by free alkalies. Soda ash, caustic soda and caustic potash all are hard on colors. Less trouble will be experienced if sodium bicarbonate, trisodium phosphate or sodium metasilicate are used.

In all of these matters, the chemicals are easier to control than the personnel.

One company having factories, printing plants and office buildings to handle, developes all methods by first studying the materials or surfaces to be cleaned, second the detergents, and third the personnel; the final test of everything being the way the clean up gang makes it work on the job.

In typical example, this company had adopted a painted numeral code to designate areas of a concrete floor. Previously this floor had been unmarked. The cleaning solution ordinarily used for concrete, quickly caused the numerals to fade out. A new solution had to be found.

Fitted to the Job

It was determined to add a little more sodium bicarbonate and some neutral soap to the mixture, with less of free alkali. But several experimental compounds were made up and given to the supervisor of the clean up gang. Each compound was restricted in use to a definite area of the floor. And after three weeks of practical tests, the final mix was devised, after which it was necessary only to make a quick laboratory check of each incoming shipment of compound to make sure that it met the new specifications.

For instructing personnel, this company largely divides all floor and other surfaces to be cleaned, into "long soak" and "short soak" surfaces, then makes modifications of detergents for types of materials. The "long soak" group generally includes bare concrete, brick, vitrified tile, and the like. The "short soak" group includes nearly all others.

All surfaces in the long soak group are first wet with clear water, then mopped with the cleansing solution. Sometimes this solution is immediately rinsed away, but if the floor is unusually oily or dirty the solution may be left in place as long as ten minutes and then rinsed off. The detergent is of the kind which causes concrete surfaces to harden. The

(Continued on page 240)

A COMPREHENSIVE PROGRAM FOR FIBRE CONTAINER PROCUREMENT

By J. F. STILLING

AN analysis of trends in the use of packaging materials covering the last forty years reveals that paper containers (which term inculdes shipping containers, cartons, folding boxes and setup boxes, paper cans, paper bags, etc.) have actually and relatively outstripped all other packaging materials in production and sales. Millions of dollars are spent on packaging in the course of a year, but it is comparatively seldom that the purchasing of containers is handled with maximum efficiency, even by the large concerns with generally sound purchasing methods. That substantial economies can often be effected is proved by the existence of packaging experts who specialize in surveying and analyzing packaging requirements.

The Survey

Several samples of each container should be forwarded to a designated location. Coincidentally, information should be submitted concerning present inventory; annual consumption; last price paid; whether usually bought individually, in combination, or contract; name of last supplier; description and weight of commodity packaged; department and location where used; carrier and distance shipped.

As the samples are received, they should be analyzed and details of construction recorded on individual data sheets bearing the corresponding information as to present inventory, annual consumption, etc. In analyzing a fibre container, it is not enough merely to record the dimensions, style, whether corrugated or solid fibre, interior parts, printing. Every detail should be recorded—caliper, weight basis, finish, method of manufacture and composition of container board, size and direction of corrugation, method of joining joints and seams, weight of empty box.

Establishing Specifications

After all data has been properly recorded, it is then possible to examine it with a view to determining practical minimum specifications in each instance. An important point to be considered in this connection is that when the weight of a container is reduced, there is a consequent reduction in shipping weight and in transportation costs—as well as in purchase price.

In certain cases it will probably be possible to effect a saving by substituting lower test boards. For instance, a saving may be effected by substituting a 200# test corrugated board, composed of 52# Water-Finish Fourdrinier Kraft outer facing and 47# Steam-Finish Fourdrinier Kraft inner facing, for a 275# test corrugated board composed of two 30-point Jute liners. While the 200# test board may be relatively expensive, it will still be considerably cheaper than 275# test board.

Also, it may be possible to take advantage of the downward revision in official fibre box specifications (Rule 41 of the Consolidated Freight Classification) to reduce certain specifications. This is not to be construed as a recommendation that all box specifications be reduced to the published minimum. While boxes manufactured to the minimum specifications in Rule 41 will safely carry many products, there are a considerable number of others which definitely should be packaged in containers manufactured to specifications exceeding the minimum.

Due consideration should be given to the size and direction of corrugations in corrugated containers. The type of commodity to be contained will dictate the type of corrugated required: A-flute corrugations are more shock-absorbent, whereas B-flute corrugations are more resistant. Incidentally, if the boxes are to be stapled, B-flute corrugations should be specified, since A-flute do not staple well. The direction of the corrugations should be considered in relation to problems of stacking and loading. Vertical corrugations are recommended to withstand the strain of lengthy stacking, but horizontal corrugations withstand better the stresses of shipment by freight.

It is possible that transportation difficulties may increase to such an extent as to necessitate purchasing boxes from local manufacturers who are unable to meet exact specifications. Also, as is currently the case with staples, a shortage of a component material may develop. To meet these contingencies, notations should be made in advance, setting forth acceptable variations from the established standard.

Standardization

Standardization, implying the determining of the best container for any given purpose; and simplification, implying the elimination of excess variety—are means whereby worthwhile economies may be effected.

A comparison should be made to determine which containers are similar, so that one type of box may be used to package more than one product, or can be used in more than one location. A further comparison should be made to discover what can be done to change or rearrange contents so that other cartons in regular use may be utilized. For instance, by coiling wire in smaller, more compact coils, it is possible to ship the same amount in a box perhaps one-third smaller. Incidentally, fewer damage claims will be received, since this change will result in a stronger package, due to reduction of space in the center of the coil and in the corners of the box. In addition, less space will be needed to stack merchandise in warehouses, in freight cars and trucks, and on dealers' shelves. Furthermore, by standardizing the overall sizes of coils of different types of wire, it will be possible to eliminate many different sizes of boxes. This in turn results in a reduction in variety of boxes carried in stock (with consequent reduction in inventory costs) and reduction in number of box manufacturers' set-up charges.

Substitution

In more than one instance, it will probably be possible to effect large savings by using a fibre box instead of a wooden crate. Not only is the

fibre box cheaper, but when properly designed, it usually affords better protection. By substituting a fibre box for a wooden crate, a reduction in weight of as much as 70% may be effected—resulting in a corresponding decrease in transportation charges. Of particular interest for export shipping is the development of weatherproof fibre cases utilizing synthetic resinous compounds with a urea formaldehyde base.

In the interests of economy, and safer and more attractive packaging, it is desirable to use fibre boxes instead of burlap. This substitution is particularly recommended now, due to the shortage of burlap.

Container Design

There are many factors to be considered when buying containers, many of them far from obvious; the cheapest container in terms of purchase price is not necessarily the cheapest in terms of packaging cost. In the light of this statement, it is recommended that all containers and their contents be subjected to critical examination with a view toward improving the container design.

It may be possible, for instance, to redesign a fibre box so that it will afford better protection, thus reducing damage claims and customer dissatisfaction. Such a comparatively simple change as changing the opening from the small end to the long side may solve a packaging problem. Again, the use of a more expensive type of container is justified if it speeds packing—particularly if it results in a reduction in labor costs more than sufficient to offset the increase in price.

Perhaps a product may be rendered more desirable by redesigning its container. It may be possible to design a box of the "tool-kit" type to replace an ordinary end-opening container in which materials are packed with excelsior. In spite of the increase in purchase price, it is likely that the "tool-kit" type of container will prove more desirable for a number of reasons. First, labor costs will be reduced since the box will be easier to pack. Second, sales will increase through increased accessibility of contents to user. Third, the merchandise will be received by the distributor in a container suitable for display purposes. Fourth, the fire hazard from scattered excelsior will be eliminated.

In a number of instances, savings as high as 50% can be effected by changing from other styles to regular slotted, since that style is the most economical. More obvious is the fact that savings may be effected by packaging in the largest quantities practical.

Attention should be paid to interior packing, since on occasion reductions may be made in the number of partitions without in any way impairing the security of the contents.

Incidentally, the use of corrugated containers for domestic shipments not only conserve material and reduce cost, but usually provides a better package.

Printing Design

Printing may not only be used as a means to convey information concerning the contents of a container, but may also be made to stimulate sales by enhancing the appearance of the package and focussing attention on the firm or product name. Effective advertising more than offsets the additional cost of printing.

The printing design should be simple, clear-cut, with a minimum of detail and colors. The essential point is to concentrate attention on the firm or product name, and at the same time to identify allied products as members of a group.

Where the information on printed boxes does not vary greatly, use may be made of printed labels or hand stamps to reduce the number of differently printed containers carried in stock.

Closures

This is a most important phase of packaging inasmuch as a package is only as strong as its seal. Proper sealing reduces losses from damaged and lost merchandise, and entitles the shipper to lowest shipping rates. It is obvious that savings may be effected by economically using sealing tape, staples, wire glue and by properly standardizing sealing methods.

A satisfactory bond between fibre board surfaces requires that they tear when pulled apart. To insure a satisfactory bond it is necessary to carefully adjust the three main factors involved—board surfaces, adhesive, and means of application—in order to arrive at the best compromise between the positive and negative features of each. Container boards and finishes are available in a variety ranging from water-finished Jute to dry-finish Fourdrinier Kraft; various adhesives, from vegetable glues to silicate of soda may be obtained; and the method of application may range from hand gluing to high-speed fully automatic sealing machines.

While sealing by means of adhesives is the only method touched upon here, a thorough study should be made of the merits of all sealing methods in relation to any given packaging requirement.

Container Purchasing

In conjunction with the development of written specifications, a logical numbering system should be developed to facilitate ordering and identification. The use of exact specifications when requesting quotations and placing orders makes it possible to place all vendors on an equal basis, and insures, to a certain extent, that properly manufactured containers will be supplied. Different manufacturers, using similar materials, have fabricated apparently identical containers; however, close examination and actual use have revealed great variations in manufacture. It is of prime importance, therefore, to deal with firms whose workmanship is dependable. In any event, a set of packaging specifications should be furnished the Receiving-Inspection Department so that an actual physical check-up may be made when a shipment of containers is received.

Do not overlook the fact that reputable suppliers can be of great assistance by offering suggestions and by making up samples when required. Incidentally, it is a good idea to visit vendors' plants in order to gain information concerning their capacity.

Under normal conditions, shipping containers should be purchased with due consideration for annual consumption, since each time that a lot is manufactured, a more-or-less constant set-up charge is incurred, regardless of quantity. For instance, if a particular container were ordered every month, twelve set-up charges would be incurred in the course of a year. If this container were ordered every six months, ten of these set-up charges would be avoided.

Normally, a considerable saving may be effected by negotiating a contract based upon semi-annual or annual requirements. Not only will better prices be obtained, but a considerable reduction in purchase expense will result — in comparison with piecemeal methods of buying.

It is particularly important that the Production Department anticipate packaging requirements so that arrangements may be made to procure the necessary containers economically and in time to meet factory shipping schedules. It has happened, especially with new products, that in the stress of actual production the problem of procuring packaging

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HOW to BECOME INDISPENSABLE

For twenty-five years Alex Nickle has been training men to take his place—but he's still very much on the job, only a little higher up

By

A. E. PERKS

"NO man is indispensable. Any fellow who tries to make himself indispensable, makes a fool of himself and a mess of his job."

That interesting business principle was given to your reporter, by a man who has twice thrown up his job and twice asked by his employer (the same one both times) to come back, at a higher salary.

He is Alex Nickle, Director of Purchasing and Stores to the City of Montreal. In a city of a million inhabitants of whom 800,000 are of French origin and language, it is remarkable enough that a quite English Anglo-Canadian should be able to work up to such a position, and hold it come hell or civic politics for years.

There are other interesting things about Alex Nickle. Honoré Parent, K. C., the city's Director of Departments (city manager to you) says of him: "It's funny. Nickle has the reputation of being the toughest boss in the city's service. And yet all the best men in the City Hall want to work for him." And that is true. There are more applications for transfer to the Purchasing and Stores Department than to any other. And this despite the fact that anyone who goes to Purchasing Stores in Montreal starts from scratch.

Some years ago, the administration offered Mr. Nickle some "good men" from other services, in case he had need of additional help, and he gave them a definition of a "good man" to which he has stuck ever since.

"I don't want any man or woman in my department" he said, "who isn't after my job. And he has to start at scratch."

There was once a case of a politician with real pull who got a friend into the City of Montreal's Purchasing and Stores Department. The man knew all about political wangling, and who should get what for which reason, but was not very strong on the multiplication tables.

The day this man took up his official position at a desk in the De Fleurimont Street offices of the department, Alex Nickle hopped into his car, drove downtown to the city's administration office, and planked his resignation on the table.

"I'm through" he said. And that's all he did say. The next move was up to the city administration. They took a few days to think it over, and when they saw that Alex was very busy turning over his administrative work to his second in command preparatory to walking out, they gave up. The political favorite was moved somewhere else, and Alex got a worthwhile increase in salary out of the episode.

"Nobody knows," he explained to this reporter, "how soon he's going to have to relinquish his job, for a short or long term, or even, sooner or later, forever. The worthwhile head of a department has somebody trained and ready to take over as soon as he has to move out. And then there must be somebody trained and ready to take that man's place, and so on, all down the line."

And so, Alex is one of the most indispensable men in the City's service, mainly because he doesn't want to be indispensable, and it's so hard to get big executives that feel that way about themselves.

Alex Nickle joined the City's service in 1908. He was then a

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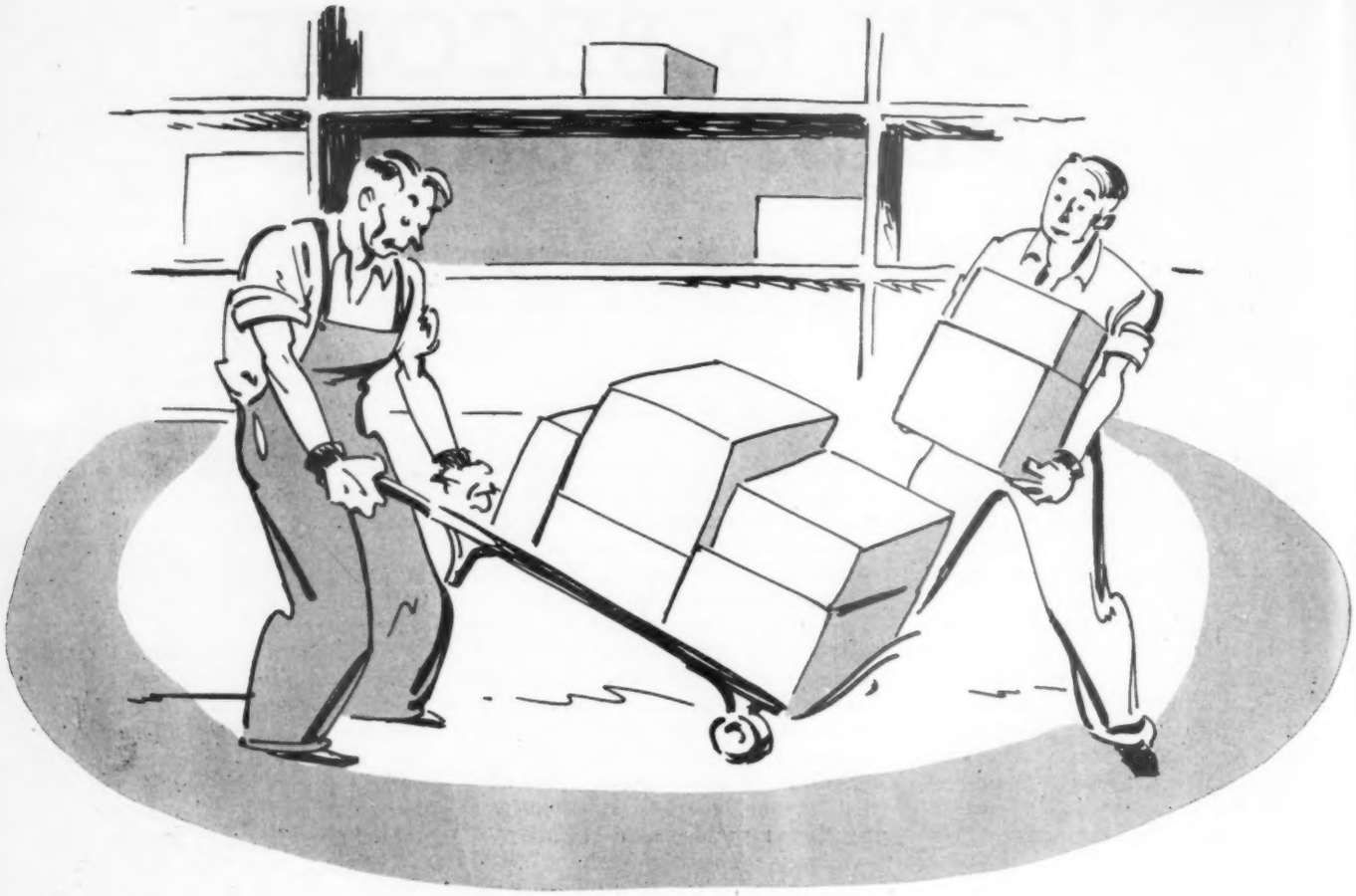
ALEX NICKLE



IMPORTANT WAREHOUSE LAW

VERY frequently Purchasing Agents become involved in suits over damage to stored goods, validity of warehouse receipts, and related warehouse law. These legal controversies usually involve thousands of dollars which may be saved by proper operation of modern law on this subject. Therefore in this article we shall review late and leading higher court cases in view of imparting valuable and dependable information designed to assist readers to avoid litigations, and where litigation is unavoidable to assist in winning a favorable verdict.

First, it is important to know that the legal duty of an ordinary warehouseman to safeguard stored property is the *same* as that of all other firms and persons who by implication or expressed agreement take possession of chattels belonging to others. In fact the law on this subject always is based upon the legal duty of a paid bailee toward a bailor, the latter being the owner of the goods, and bailee the keeper. This is important information. Once in many instances purchasers may be bailees, and under other circumstances they may be bailors.

For illustration, where a Purchasing Agent accepts delivery of purchased merchandise, but for some reason he refuses to take ownership or title to such goods, the Purchasing Agent's employer becomes a legal bailee. Under these circumstances the purchaser must notify the seller that he will not keep the merchandise, but is holding it subject to the seller's order. Thereafter, the relation of bailor and bailee exists and the purchaser is legally obligated to use the same degree of care as required of warehousemen to safeguard the merchandise until the seller orders desposition of it.

This is important law because the average layman believes that when a person leaves goods in his care, the owner of such goods assumes the responsibility in event of loss or damage. However, as above explained, the law *automatically* assumes that the holder will use at least an ordinary degree of care to safeguard the goods and his failure to do so always results in liability.

Also, a purchaser who takes goods on the consignment plan or bases is bound to exercise a warehouseman's degree of care to provide a safe storage place. Few purchasers realize their full responsibility with respect to consigned goods. In a leading higher court case a purchaser was held liable for payment of $2500 as payment for a carload of roofing that he had accepted on consignment basis and which he had stored in a building having a leaking roof with the result that the water which leaked through the roof damaged the roofing.

So, therefore, the relation of bailor and bailee exists where any person assumes control over another's property with prospects of earning a profit, and the bailee may be held liable for full value of the goods if he fails to exercise "ordinary" care to safeguard them against loss or damage. The legal definition of the term "ordinary care" will be clearly explained in this discussion.

Generally, a warehouseman is liable for the loss or damage to stored goods, *only* where it is shown to the satisfaction of the Court that the injury occurred as a result of negligence on the part of the warehouseman or his employes.

In other words, a warehouseman is liable for loss or injury to stored merchandise only where it is proved to the satisfaction of the Court that he or his employes failed to exercise ordinary care, such as would have been used by the average prudent person to safeguard the property in his care.

Notwithstanding the fact that all bailees, who anticipated earning a profit from the transaction, are required to exercise ordinary care to safeguard valuable property and chattels in their possession, *only* true and legal warehousemen may issue valid warehouse receipts. Therefore it is important to distinguish between warehousemen and ordinary bailees.

The higher courts consistently hold that the term "warehouseman" means a person lawfully engaged in the business of storing goods for profit. All laws relating to warehouse receipts refer exclusively to receipts issued by persons who are engaged in the business of storing goods, not for themselves only and in their own storage room as a part of their plant, but for others as well.

Therefore, warehouse receipts are invalid which are issued by a person or corporation not actually engaged in the warehouse business.

For example, in Continental Can Company v. Jessamine Company, 150 S. W. (2d) 922, it was shown that a corporation owned a large storage building. It built a wire partition through the building, cutting off a room from the other part of the building, and stored some of its merchandise therein and issued warehouse receipts which represented this merchandise.

After several months many suits were filed against the corporation by creditors. The holders of the warehouse receipts contended that such receipts were valid, whereas the common creditors argued that the warehouse receipts were invalid because the corporation had not acquired any warehouse for general storage purposes, but only occupied the space in one end of its building.

In holding the warehouse receipts invalid the court said:

"It, therefore, would appear that the alleged embarkation in the warehouse business for the purpose of storing defendant's product was one of mushroom creation, as well as of like legal standing. To uphold and give legal effect to the rights would destroy all safeguards of statutory law enacted to provide for constructive notice of liens and incumbrances upon property by persons innocently contracting with reference thereto... To uphold such a scheme would permit every merchant in the state, notwithstanding the declared policy of the state to the contrary, to have possession of large stocks, thereby inducing credit, and to cover them with secret liens, thereby deceiving creditors. It would, in effect, permit such merchant to pledge his entire stock without change of possession, without record of it, and without notice to the world."

So, therefore, while any and all persons, firms, and corporations may be responsible, as a warehouseman, for safe storage of merchandise owned by others, yet only legal warehousemen may issue valid warehouse receipts.

If the goods, represented by a negotiable receipt, are lost or stolen and the finder or thief sells them to a *bona fide purchaser*, it is not a legal sale and will not divest the ownership in the goods. For this reason the warehouseman is bound to return the goods to the original owner and holder of the warehouse receipt.

The rule of the law is based upon the well settled principle that a purchaser of property takes no better title than that possessed by the seller, unless it is shown that negligence on the part of the original owner resulted in the controversy over the true ownership.

Another important point of the law is that forging of an endorsement on a negotiable receipt, by a person who may have found it, or otherwise obtained it unlawfully, confers no rights upon either a bona fide holder or purchaser of such receipt. This is so because a forged endorsement is legally no endorsement at all. Therefore, a warehouseman is liable who delivers goods to a person who finds or steals a warehouse receipt, irrespective whether the same is endorsed by the latter.

for PURCHASING AGENTS

By

LEO T. PARKER

Negotiable Documents

At this point it is well to explain that when merchandise is deposited in a warehouse a receipt is issued by the warehouseman which may be either negotiable or non-negotiable. Although a warehouse receipt represents money it is not a true representative of money, because it does not pass from hand to hand as bank notes or coin. However it is a contract or a symbol of ownership of the merchandise covered by it, and the warehouseman is bound to deliver the merchandise to the holder upon presentation.

On the other hand, if a negotiable warehouse receipt has been issued and properly endorsed and negotiated, the warehouseman is liable to the legal holder of such receipt, if he refuses to deliver the merchandise to such holder, who offers to surrender the receipt with a lawful endorsement. However, it must be kept in mind that these principles of law relate exclusively to negotiable warehouse receipts.

A Purchasing Agent who stores goods with a warehouseman and receives a non-negotiable warehouse receipt may demand and receive delivery of the goods from the warehouseman *without* presenting the receipt. But where any person stores goods, and receives a negotiable warehouse receipt, the warehouseman may without liability refuse delivery of the merchandise unless the receipt is surrendered, or if lost the owner must file sufficient security and legal evidence to convince the warehouseman that he will not suffer subsequently losses by delivering the goods to the one who

claims ownership but who cannot or will not surrender the negotiable receipt.

The law imposes upon warehousemen full and complete liability for any loss or injury to goods caused by failure to exercise such care as a reasonably careful owner of similar goods would exercise. However, a warehouseman is not liable for any loss or injury to goods which could *not* have been avoided by exercise of such care as would have been exercised by other reasonably careful and experienced warehousemen with respect to similar merchandise.

Another important point of law is that unless the owner of the lost, destroyed or damaged goods holds a warehouse receipt and demands that the warehouseman deliver the goods in good condition, the owner of the goods automatically assumes the burden of proving that the injury resulted from negligence on the part of the warehouseman, or his employes. If the owner fails to prove these facts, the warehouseman automatically is relieved from liability. This law is applicable to all merchandise, including perishable goods.

Warehouseman Not Liable

For example, in Carando v. Springfield Cold Storage Co., Inc., 29 N. E. (2nd) 697, suit was filed against a warehouseman to recover damages for the spoilage of perishable goods while stored in the cold storage warehouse. The warehouseman had agreed that the storage temperature should not exceed forty-five degrees. The lower court listened to the testimony and decided that the warehouseman had exercised the same degree of care in the storage and keeping of the merchandise, under the circumstances, as a reasonably careful man would exercise over similar goods of his own. Therefore, the lower court held the warehouseman not liable. The owner of the goods appealed to the higher court and contended that he was entitled to a recovery of damages because the warehouseman did not act in a prudent and careful manner in handling the salami. However, the owner did not introduce convincing testimony proving that the warehouseman had failed to use ordinary care to protect the goods against spoilage and he did not demand as holder of a warehouse receipt that the warehouseman deliver the goods in good condition.

Therefore, the higher court upheld the lower court and, in holding the warehouseman not liable, said:

"The defendant, as a cold storage warehouseman was liable for 'any loss or injury to the goods caused by his failure to exercise such care in regard to them as a reasonably careful owner of similar goods would exercise; but not, in the absence of an agreement to the contrary, for any loss or injury to the goods which could not have been avoided by the exercise of such care.' This rule conforms to the rule existing at common law, and, there being no evidence of a demand by the plaintiff as a holder of a warehouse receipt, under G. L. (Ter. Ed) c. 105, the burden was on the plaintiff to prove that his goods were damaged through the defendant's (warehouseman) negligence."

Separate Room Liability

Considerable discussion has arisen from time to time over the question whether a warehouseman is legally bound to exercise the usual degree of "ordinary" care to safeguard goods stored in a separate room where the owner of the goods retains possession of keys to the room. It has been argued that when the bailor, or owner of the goods, has possesion of the keys he is obligated to safeguard his own goods and that the bailee, or warehouseman, is relieved from the duties to exercise the usual degree of care. However, this is not so.

For example, in Zweeres v. Thibault, Vermont, 23 Atl. (2nd) 529, the testimony disclosed that the owner of merchandise rented a separate room is which he requested that goods be stored. He took the keys for the room.

After the goods had been in storage for several months he observed that a considerable number of holes had been gnawed in the goods by rats. He sued to recover the amount of the damage to the goods. The higher court rendered a verdict against the warehouseman, saying:

"If goods are stored in a warehouse, the fact that the goods are placed in a separate room and that the bailor is allowed the key to the room does not necessarily make the relation that of landlord and tenant. . . . In the case of a bailment for hire the bailee is liable for injury to the property in case it results from his failure to exercise due care and diligence in its preservation."

Another Pertinent Case

Also, see Patterson v. Wenatchel Canning Company, 53 Wash. 155, where a patron rented a cold storage room to be used for storing beef at the consideration of $100 per month. The court held that the relation of bailor and bailee existed, although the patron retained the keys.

The reason the courts, in the above cases, held the warehousemen obligated to exercise the usual "ordinary" degree of care to safeguard stored goods, although the patron kept the keys to the separate room in which the goods were stored, is that a legal bailment is the delivery of goods for any purpose, upon a contract, expressed or implied, and that after the purpose has been fulfilled they shall be redelivered to the bailor, or otherwise dealt with according to his directions, or kept till he reclaims them.

Although a warehouseman gives to the patron keys to a room in which his goods are stored this fact does not change the relationship of bailor and bailée. The test of responsibility is whether or not the owner of the goods made such a delivery to the warehouseman as to amount to a relinquishment of exclusive possession control, so that the warehouseman can exclude the possession by all others. If he has the general rule is that the transaction is a bailment.

On the other hand, if there is no such delivery and relinquishment of exclusive possession, and the owner's control and dominion over the goods is dependent *in no degree* upon the co-operation of the warehouseman, and his access thereto is *in no wise* subject to the latter's control, it is generally held that the owner of the goods is a tenant or lessee of the space upon the premises where the goods are kept. Under circumstances where the patron is merely a tenant, the warehouseman is *not* ordinarily responsible for damage to the stored goods, because a tenant is duty bound to safeguard his own property and goods. But, as above explained, when the relationship of bailor and bailee exists the bailee or warehouseman is legally bound to use ordinary and reasonable care to prevent loss of or damage to, the stored goods.

Law of Fire Losses

No warehouseman is liable for loss by fire of stored goods, unless the evidence proves that the loss resulted through negligence of the warehouseman, or his employes. See the leading case of American Storage, 297 S. W. 670, where a warehouseman was held liable for fire loss because he did not employ a night watchman and had no automatic sprinklers in the warehouse. The court held that failure to provide these protections was negligence

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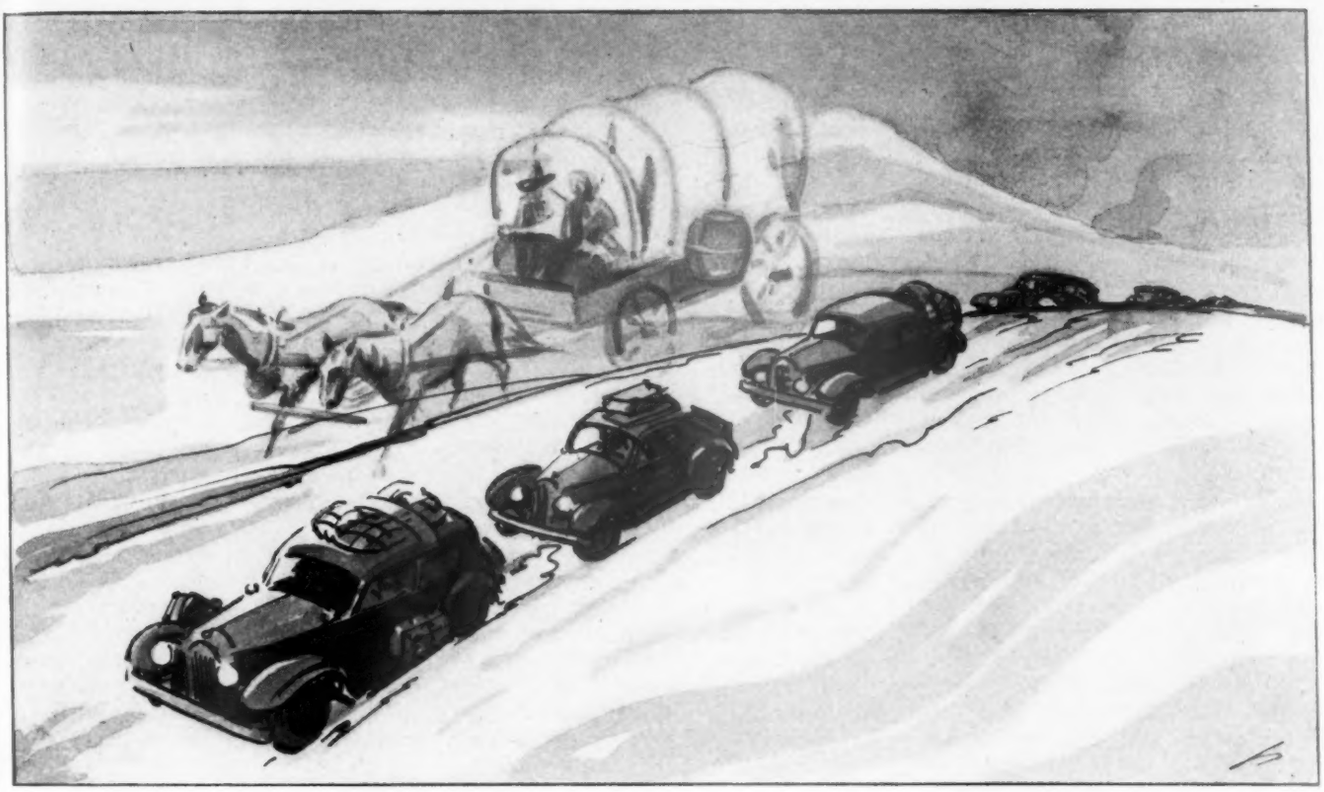

THE OTHER SIDE of the HILL

By CHARLES FORD

SOMEWHERE in the literature of hoss and lariat and sixgun is a saga of two loose-footed cowboys. They would jog into some highly immoral cowtowns about sunset, put up their cayuses, down a couple of snorts of bugjuice to cut the dust, deal themselves a hand each of ham and eggs; then roll cigarettes, sit back, and await adventure. That town surely harbored some unholy mess that needed tidying up, and these two conceived it their job. And when their ready sixguns and handy lariats had purged that community of sin, through the smoke of their cigarettes would loom an outline of hills. Who knows there isn't another nest of evil on the other side of them hills? Let's mosey along and see.

Plymouth Rock was about the first of a succession of frontiers that spanned the western world. The Pilgrim Fathers didn't think of it that way. They came to stick, and stick they did. But a lot of their descendants got curious about the other side of the hill, and pushed out, settled, fought Indians, and sent forth newer generations with equal curiosity about what lay the other side of the looming hills. History records only a handful of the original Pilgrim Fathers; but, judging from claimed descents, the Queen Mary couldn't have held them all.

Surplus from the Soil

Back in the gay nineties, when a Purchasing Agent wanted a forecast of business, he studied the crop reports, frequently compiled by the undoubted descendants of one Ananias. But they were the best he had, and served. If crops were big, business was going to be good, because the farmers would have plenty of money to spend. As much as any Purchasing Agent was permitted in those days, he planned his course of action by the soil's yield. In those piping times of peace and the Florodora Sextette, we could ship our wheat and cotton abroad and get real money for it. The bigger the crop, the more money. In Europe, Hans and Tony and Mike and Ivan couldn't raise what they needed, and we had the goods. But times changed, and we didn't. Russia and Argentina came in with wheat; Brazil and India and Egypt and Africa came in with cotton. We suddenly found that Tony and Mike were buying elsewhere. Our surpluses stayed surpluses.

Then the downtrodden farmer began to be heard from. It became harder to sell what we couldn't eat and wear, and the politicians sat up and took notice. Farmers had votes, plenty of them. It was up to us to bestir ourselves.

The net result we know. Uncle Sam has vast stores of cotton and wheat in hock—sold, as far as the growers are concerned. To hell with Ivan and Hans as long as Uncle Sam stakes us; and what's he for, anyway?

Some of us showed our barnacle-encrusted ignorance by suggesting that something be done to turn these vast stores into money. Nix on that, my lad; the market might drop, and there would be a new crew in Congress. The corn and cotton legislator is firmly convinced that he can train the law of supply and demand to hoist itself around by its bootstraps; and that's the way he hangs on to his ten-thousand-dollar job. And year after year we fall for this hoary hokum.

Has there been any constructive thought over this situation? Mostly in the shape of a few symptoms here

and there. A certain Mr. Ford, who used to make automobiles before he got into the airplane business, developed a very decided yen for the Soya bean, then mostly grown in Manchuria. He has found a lot of uses for it; the crop is growing in importance, and when somebody finds a way to separate its gaseous content to drive automobiles, we'll have Soya bean fields clear to the top of Pike's Peak. But so far, by heck, us farmers know how to grow wheat; we have always growed wheat, and by gosh, we're going to keep on growing wheat. At least as long as Uncle Sam keeps his hock-shop open.

In one of the small eastern states, where occasionally a farm may be espied between factories, one hay-hustler impelled by the Lord knows what bucolic inspiration, had the soil of his place analyzed. It was found identical with the soil of Aroostook County, Maine, where the potatoes come from. So he began planting spuds, some of his neighbors likewise; and a few of them made so much money that potato bags became a staple stock with the merchants, and potato bugs kept the farmers busy between coupon clippings. If spuds, why not other things?. What of the modest colored chemist at Tuskegee, who made, out of the lowly goober—a nickel a bag at the ball games—almost everything except U-boats and tractors? But these are retail propositions. Somebody still has to think the thing out wholesale; we continue to raise a devil of a lot of wheat and cotton.

Opportunity Knocks

It's all right to find gold in them thar hills, but back in the aforesaid gay nineties somebody thought he made a discovery of tin in the Black Hills. There was a lot of excitement, but the fizz soon escaped. If it had been gold the government would have bought it and buried it, squirrel-fashion, way down in Kentucky. But tin! Why that guy could have been elected president if he made good. And the alert cuss who gnds some way of growing, in this hemisphere, the fibre used for making Manila rope, won't have to worry much about his grocery bills.

If somebody had started in earnest years ago on synthetic rubber we needn't have cared a damn whether or not the Japs swiped the far-east rubber lands. We could have turned our hocked wheat into automobile tires and thumbed noses at Mr. Hirohito if we hadn't felt he needed a spanking on—well, on general principles. But we waited; our tail wagged into the crack and the Japs shut the door on it.

Here and there in the papers, you read something about this or that country planning to put in American machinery to turn out things they now buy from us. It's a perfectly natural thing for them to do, but where does it leave us?

Marketing, Not Miracles

Really, I don't think it makes much difference. If we don't furnish the machinery somebody else will. But as to the product, the one who makes it best and cheapest will get the business. When it comes to making things in a big way, we can admit without blushing that we have the whole world skun. If we can do it in motor cars and radios we can do it in anything else, where we have the materials; and we don't need to bay the moon for more tariff protection either. We may pay higher wages, but we get so damned much more product per wage that the higher scale doesn't matter. But we are terribly lame in selling abroad. We as a nation don't know any more about selling our manufactured stuff abroad than our cotton and wheat. We somehow have the idea people ought to buy from us, which there ain't any such thing in business. So we huddle into our coat collars and build a mental fence around our boundaries. And we expect some kind of a governmental miracle to help us out, not remembering that governmental miracles are likely to make us go broke.

The way to go out and sell anything is to go out and sell it. If the benighted Bolivian wants his stuff packed so he can load it burro-back and jackass it over the Andean trails, he should have it that way. He knows more about jackass transportation than we do. Britain does it. Kaiser Willie's bright boys did it until Willie got war-crazy and lost his shirt. Why, if Bill had kept the peace and gone on trading the way he started, German would now be the commercial language of the globe, instead of the prevailing accent in hell.

In the post-war world, we've got to sell. Also, by the same token, we've got to buy; we can't do one without the other. The Buyer, or Purchasing Agent, or Director of Purchases, or Vice-President in charge of, etc., will be very much to the front. I figure a new conception of business, domestic as well as foreign, after we have snugly bedded Mr. Hitler, Mr. Hirohito and their cohorts on a very redhot gridiron. It will be bigger and broader, and decidedly more intelligent. We'll all be so damn' near busted that there will be no room for operations not directed by real intelligence and ability; there ain't goin' to be no dough for anything but straight business and no foolin'. Arm in arm, the great business triumvirate—Making, Buying, and Selling—can march down the middle of the roads of trade and plaster the cock-eyed world with our goods. All the world loves a customer. But to get paid for our goods we must make customers and at the same time *be* customers. We must sell and buy on a world-wide scale; you can't vision a global trade with a Pike County mind. We must make money out of other nations, and let them make some money out of us. And it must be shrewd and gentle dealing, because we must grant credits of some sort to peoples who have nothing wherewithal to pay. If nations make money out of one another, they will love one another.

The Open Road

A far-flung world commerce will have no place for the purchasing officer who is content to sit on his hunkers in an office, with no interest in what is beyond the hills visible from his office windows. The purchasing officer of the new world will wear out more shoes than pants. He will be the Daniel Boone, the Kit Carson or the Fremont, scouting the frontiers of business instead of wilderness. And when they have scouted over all the hills from east to west, investigated their other sides, and adventured their valleys; and finally are back home with the old gripsack tossed into a corner, new frontiers at home will have risen up in his absence.

Many companies, with capital and resources practically unlimited, maintain great laboratories, to delve into the hidden nooks of nature, those intangible frontiers that begin in the back yard; and those laboratories turn up many things. We take for granted cellophane, rayon, plastics, synthetic rubber, and the never-ending discoveries from the humble coal-tar we used to think was such a damn' nuisance. We are learning to utilize our waste. The slabs and bark and sawdust that used to choke the streams now are fuel to run the saws. The disgraceful city dumps are becoming mines of material. Sewage is a fertilizer; and a factory that lets

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ARE YOU READY FOR "V" DAY?

How Much Post-War Planning Should A Purchasing Agent Do?

What Can He Do Now?

★

By RICHARD WHITMAN

PRIOR to December 7th, 1941 we heard a lot about the preparations for "M" Day. In spite of all the publicity, magazine articles, speeches and the like when Mobilization Day finally came we found the country only partially prepared. Had we been fully on the alert we might have avoided the disaster of Pearl Harbor and Bataan.

Today considerable attention is being given to post-war planning. Thinking Americans realize we must plan to win the peace just as we must now struggle to win the war.

Mr. A. N. Wecksler in the May 1943 issue of PURCHASING lists a seven-point program on post-war planning by the National Resources Planning Board. The points covered by the program are general recommendations on the conversion of industry from war production to civilian output. A general outline of this type is helpful as it serves as a basis for specific action on individual problems.

Today the Purchasing Agent is contributing to the war effort to an immeasurable degree. By the same token he will be expected to contribute to post-war conversion of industry to civilian output. If the Purchasing Agent is to do an efficient job he will need to plan now so as to be ready to act later.

Handling Cancellations

For the purpose of this discussion we will assume the Purchasing Agent in question is working for a company now doing considerable war work and that his company can and will revert to the manufacture of civilian goods.

On "V" day his company will no doubt receive notice of cancellation on many of their war contracts, if not all. We have heard some discussion on the possibility of an orderly cancellation program being carried out, but until the government issues an official statement covering such a program we must assume that wholesale cancellations will come with victory. Recently one branch of the government, through a statement issued by an official, said they made up a cancellation notice with each purchase order and held the cancellation notice in the files ready to mail out the day hostilities cease.

The Purchasing Agent should be ready to act immediately on receipt of cancellations. Many purchase orders now carry a cancellation clause. In such cases the Purchasing Agent should not have too much difficulty except in cases where the vendor continues to run materials after receipt of the cancellation notice.

What about orders that do not carry a cancellation clause? It may be of interest to know that hundreds and perhaps thousands of concerns do not include such a clause on their purchase orders. Many Purchasing Agents take the position that any order is subject to cancellation if the goods have not been made up. They point out you probably would have to pay the vendor for raw material and semi-finished goods he has on hand to fill the order, which is the usual provision contained in a standard cancellation clause. Other Purchasing Agents have a standard clause which they insert on some orders where in their judgment it is necessary or desirable.

It is not the purpose of this article to discuss the merits of the use of cancellation clauses, but rather to suggest the problem be given consideration now and a decision made today rather than to put off such an analysis until it is too late.

For those who are of the opinion the subject of cancellation clauses is of minor importance I would like to suggest they try to put one on every order for the next month and observe the reaction of suppliers, particularly where cancellation clauses are never acceptable in peace time. Experience has shown that often a representative will indicate verbally that your order is subject to cancellation. He probably doesn't say it quite that way but rather, "Of course you know we won't ask you to take what you don't need." In some instances when a cancellation clause is inserted on the order, his company simply refuses to accept it.

The Purchasing Agent should also give some consideration at this time to the subject of renegotiation clauses. In some cases the law provides a renegotiation clause be shown on orders to subcontractors and others. This is not a matter of discretion but is mandatory on the part of the buyer. There are a number of other points the Purchasing Agent should consider. What happens if the contracts your company has are renegotiated? Can the buyer demand a reduction in price from subcontractors (a) on parts already furnished or (b) on future parts to be supplied?

Starting Production

So far we have talked about what the Purchasing Agent might do to stop war production orders. Now let us examine some of the things he might do to help start peace time production.

First, the Purchasing Agent should have some idea of what he will need to buy in order for his

company to start making peace-time products. He will need to confer with his sales department now in order to know just what products they expect to market. Perhaps that metal case you always used will be plastic after the war.

New Sources

Second, the Purchasing Agent will need to know where to buy the materials required to make the new or improved products. He should know how long it will take to obtain delivery. We might expect a lot of things to be readily available. On the other hand many industries will require many months to convert their plants. For example, the automobile industry will probably not produce new cars for six months or more after the war and by that time they will have a large backlog of unfilled orders. The Purchasing Agent who is going to need a lot of cars and trucks should give this problem some thought now as priorities will be out the window by that time, or will they?

New Materials

Third, the Purchasing Agent might very well begin now to survey vendors in an effort to learn what products they expect to offer after the war. Perhaps that new synthetic rubber you are using for war products can be used in one of your peace-time products. Your own research and development department may be studying the problem, but it may be that the manufacturer also has given the matter some thought and can offer constructive information now. The Purchasing Agent who obtains such advance information is performing a real service to his company.

New Equipment

Fourth, what about new equipment required by the production department. Many of the machines now in use which could be converted to produce peace-time goods are wearing out and will need extensive repairs. A survey may disclose that some of the old pieces of equipment were contributed to the scrap drive and have not been replaced. Perhaps the Purchasing Agent will want to place orders now for some of the new equipment. Perhaps not a firm order but one subject to adjustment as to price, specification and terms. This at least will give you "an order on the books" which may take the place of the priority we have grown to rely on. I know of one equipment manufacturer who is actively soliciting such orders and is finding considerable interest on the part of Purchasing Agents. I understand this company has actually booked several hundred such tentative orders in the past six weeks.

This same policy might also be considered in the case of raw materials and semi finished goods. I heard of one Purchasing Agent who is considering having actual purchase orders prepared and ready for mailing on "V" day along with his cancellation notices on war orders, on the assumption that the fellow who gets his order in first will have the best chance of securing prompt deliveries of initial quantities of goods required to revert to civilian output.

When you consider the problem, the Purchasing Agent who does not prepare for "V" Day is taking a terrific gamble. It is admitted there may be a lot of surplus production after the war, but during the first few weeks or months during the change-over there is likely to be a scramble for goods. If such a condition occurs the Purchasing Agent must ask himself if his company could afford to be without goods for 60 or 90 days. More likely his company will want almost immediate delivery in order for them to begin production of their own peace time goods. The only sure way for the Purchasing Agent to get the goods is for him to plan now for "V" Day and be ready to act on that day or the day after, and not 30 days later.

New List of American Standards

Reference Booklet Lists More than 600 Standards—Includes New and Revised Standards—Special Section is Devoted to American War Standards

USEFUL reference booklet for Purchasing and engineering departments of manufacturing firms, which contains new list of American Standards, is announced by the American Standards Association.

More than 600 standards are listed, 94 of which represent new and revised standards approved since the last issue in August 1942. These are identified by an asterisk.

Standards are listed by subject and cover civil, mechanical, electrical, mining, chemical and other engineering fields as well as metals and materials, specifications of interest to the textile, wood, pulp and paper industry, methods of test for the finished product, dimensions, etc.

They reach into every important engineering field and serve as a basis for many municipal, state and Federal regulations. By frequent review these standards are kept abreast of new developments in the fields to which they relate.

Recently the American Standards Association has entered the field of consumer goods, working on sizes for children's garments, household refrigerators, gas appliances, sheets and sheeting, bedding and upholstery, fastness of colored textiles, photographic standards, civilian radio, and so on. It is also developing standards for women's work clothes as a special war project.

Standards have assumed a vital role today in connection with the war effort. Every Government order is based on specifications, and standards are further used in industry in simplifying the production problem, conserving materials, pegging quality to price control, in inspection, contracting and subcontracting.

A special section of the list is devoted to American War Standards —standards developed specifically for war production needs. These wartime jobs have been requested by the Army, Navy, War Production Board, Office of Price Administration, and industry. In fact, the Association is now under contract with the Federal Government to carry on such work.

Another special section is devoted to American Safety Standards—also of great importance to all-out war production in connection with the President's program for the conservation of manpower as well as the reduction of absenteeism in war plants, when such absenteeism results from accidents.

In each case, the standards approved by the American Standards Association represent agreement on the part of maker, seller and user groups as to the best current industrial practice. More than 500 national organizations are at present taking part in this work.

The list of American Standards for 1943 will be sent free of charge to anyone writing for it. Requests should be addressed to the American Standards Association, 29 West 39th Street, New York, N. Y.

BASIC PRINCIPLES of PURCHASING

VI. PRICE FACTORS IN BUYING

NO honest Purchasing Agent will attempt to deny that he is interested, and keenly interested in the price of the materials he buys. It is one of the major responsibilities of his position to conserve the company's investment in materials and supplies, to make the most advantageous purchases possible, and to maintain his company's competitive position in the industry so far as material costs are concerned. To a considerable extent, his performance in respect to this responsibility is measured by the prices paid for his purchases. The problem, of course, goes deeper than the figures appearing on the invoice. Price must be correlated with quality, suitability, service, and commercial relations, in order to arrive at a real concept of value. And price is only one element of cost. The expense of transportation and handling involved in getting materials to the point of use, and the relative costs of application, workability, and use, are factors which will frequently outweigh any differentials in price itself. The more expensive material or equipment, in point of price alone, may well prove to be the more economical in the final accounting.

The characterization of a Purchasing Agent as a "price buyer"—used as a term of derogation and reproach—means that the Purchasing Agent is giving undue emphasis to the price factor in his selection and purchase of materials, perhaps even making this the sole basis of his buying policy. That is patently an unsound attitude, as any unbalanced policy would be, leading to inefficiency in spite of the apparent savings. But it does not imply that price can be disregarded, which would mean just as serious an unbalance in another direction and neglect of an important buying consideration.

Just as in weighing quality factors, it is not primarily a question of maximum quality vs. minimum quality, but of the *right* quality for the intended purpose, so in the matter of price it is not primarily a question of high price or low price, but of the *right* price. As a matter of fact, dealing with many standard materials and products, strictly competitive in nature—and this covers a large portion of industrial purchases—price may be not only the obvious point of comparison, but may be the only differentiating factor. Also, in some well organized markets, it frequently happens that the price too, is "standard", and when this uniformity approaches a universal condition in any industry it is generally regarded as *prima facie* evidence that there is something not quite above-board in that market. When either of these conditions arises, focussing the Purchasing Agent's attention upon price above other factors, the price element is magnified beyond its true importance.

Certainly the sales function is fully as price-conscious as is purchasing, and not altogether in reverse—perhaps in part from an exaggerated notion of its importance in purchasing psychology, and partly through a sound recognition of price as an economic and competitive factor in marketing. During a period of legally controlled prices, setting up an artificial economic situation in which prices tend strongly toward uniformity at the permissible ceiling level, buying economies will naturally be sought in the field of the more flexible factors, such as quality. When price competition disappears, the competition between materials is intensified. Controlled prices stimulate the search for possible substitutes, and the buying habits of whole industries, as well as the outlet for their products, have been changed because of this. In the overall economy, whole markets are won or lost as effectively through price policies as through technological reasons.

How Important Is Price?

In the earlier discussion of quality factors in purchasing, an analysis of buying motives was presented which indicates the true and normal balance between price and other factors. In that analysis it was shown that in the selection of a particular product, price does not enter into the buyer's calculations to any extent. In other words, the first consideration is to find and procure materials, equipment and supplies that are adapted to the purpose and the need; obviously no price advantage

has any validity if the goods purchased are not suitable. On the other hand, price is a definite factor in the selection of the supplier from whom the desired goods are to be procured—though distinctly subordinated to the reliability of the supplier, the assurance of a continuous supply, and such service factors as accessibility and cooperation. Wartime purchasing conditions have emphasized, but have not changed, the relative importance of these various considerations. Price is one of the essential buying motives, but it is one of the last points to be considered in a transaction.

There is also room for a good deal of discrimination as to the importance attached to price in respect to various phases of the purchasing program in any particular company. In some industries, a relatively limited list of important raw materials make up the great bulk—even up to 90%—of the total purchase budget. Under such circumstances, the Purchasing Agent may wisely decide to concentrate his attention on price analysis and negotiation within this limited list of items, where the net results will bulk largest, with a minimum concern for price on the minor items. There are some volatile or sensitive commodities whose price fluctuates widely in the course of a season, or more rapidly from day to day, again calling for astute appraisal of markets and sources in order to compile a favorable purchase record. There are, further, some commodities which must be contracted for, or actually procured for curing or processing, long in advance of their final use; here, too, sound policies of price buying are essential to minimize the hazards of loss through adverse market trends.

But while such selective attention to price may be a practical necessity, it does not follow that price is unimportant on the smaller items. Examples of surprising savings have been made by attention to such minor and prosaic items as pencils, printed forms, cleaning supplies, paints, packaging supplies, and a host of other materials that might ordinarily be taken for granted. The cumulative effect of these looms large in the record of a year's purchases, and in most cases this is multiplied in the repetitive purchases as the goods come up for re-order.

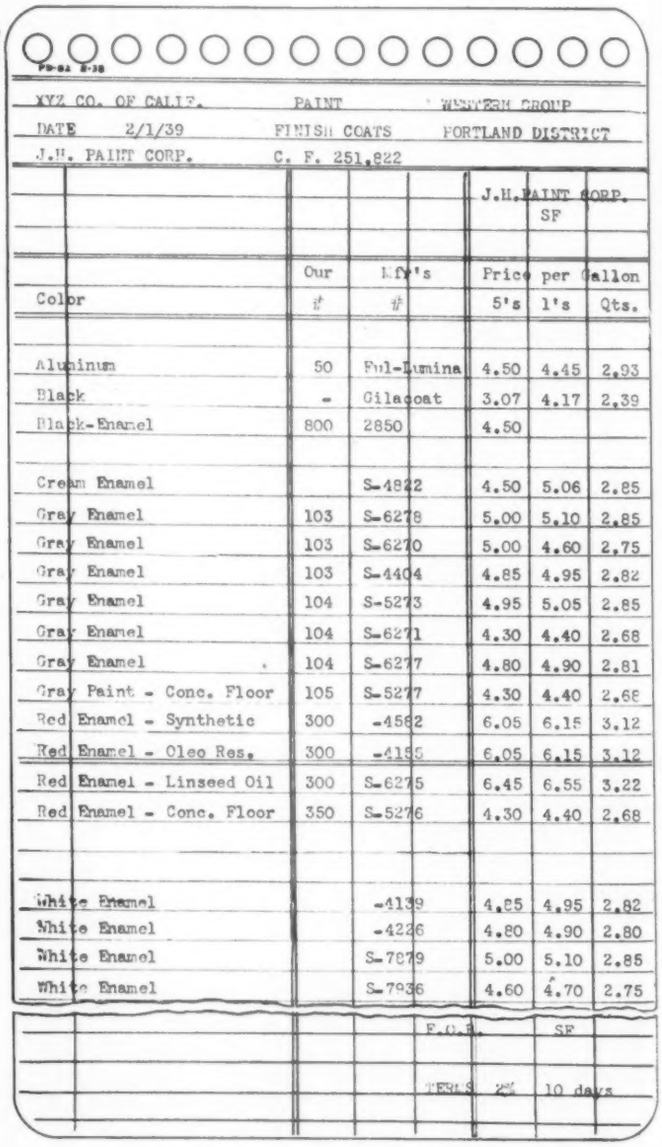
What Makes a Price?

The old concept of price as a product arrived at by sharp trading and poker tactics after the manner of an Oriental bazaar, has pretty well gone by the board. There never was any assurance under that system that the best price, or even a fair price, had been obtained. With a trading bout in prospect, the original quotation was reasonably sure to include a leeway for trading, and however great a concession was won from that figure, there always remained the uneasy doubt as to how much greater a concession might have been granted. Today's buyer insists on a firm quotation, and today's seller is ready to win or lose the order on his form quotation. Negotiations are concerned primarily with the conditions surrounding the purchase, questions of quantity, tolerances, deliveries, terms of payment, and the like, which may affect the net price but without beating down the basis on which price is calculated. Legislation like the Robinson-Patman Act prevents the evils of a loose and indeterminate price policy based on opportunism and "what the traffic will bear" in a particular case. Price, as a factor of both buying and selling, has been placed on a more scientific plane.

There are many different theories of price. For the purposes of this discussion, our attention can be confined to three fundamental types of reasoning: (1) that price should bear a reasonable relation to cost (materials *plus* production cost *plus* profit); (2) that price is basically determined by economic conditions over which neither the buyer nor the seller exercises control; (3) that price is determined by competition. All three of these theories operate, in varying degrees, in the normal course of business, and the Purchasing Agent's analysis of the price factor must necessarily take them all into account in arriving at his decision of what constitutes the right price for a given product at a given time. But first let us examine them separately, in the order named.

Price Related to Cost

From the purchasing standpoint, price should bear a definite relationship to cost. One of the first decisions to be made in any procurement program is to determine whether it is advisable to buy a desired part from an outside manufacturer or whether to make it in the company's own shops—procurement by manufacture. For example, if the company requires a quantity of castings for its product, there is the alternative of purchasing the



XYZ CO. OF CALIF. PAINT WESTERN GROUP
DATE 2/1/39 FINISH COATS PORTLAND DISTRICT
J.H. PAINT CORP. C. F. 251,822

Color	Our #	Mfr's #	Price per Gallon J.H. PAINT CORP. SF 5's	1's	Qts.
Aluminum	50	Ful-Lumina	4.50	4.45	2.93
Black	-	Gilacoat	3.07	4.17	2.39
Black-Enamel	800	2850	4.50		
Cream Enamel		S-4822	4.50	5.06	2.85
Gray Enamel	103	S-6278	5.00	5.10	2.85
Gray Enamel	103	S-6270	5.00	4.60	2.75
Gray Enamel	103	S-4404	4.85	4.95	2.82
Gray Enamel	104	S-5273	4.95	5.05	2.85
Gray Enamel	104	S-6271	4.30	4.40	2.68
Gray Enamel	104	S-6277	4.80	4.90	2.81
Gray Paint - Conc. Floor	105	S-5277	4.30	4.40	2.68
Red Enamel - Synthetic	300	-4562	6.05	6.15	3.12
Red Enamel - Oleo Res.	300	-4155	6.05	6.15	3.12
Red Enamel - Linseed Oil	300	S-6275	6.45	6.55	3.22
Red Enamel - Conc. Floor	350	S-5276	4.30	4.40	2.68
White Enamel		-4139	4.85	4.95	2.82
White Enamel		-4226	4.80	4.90	2.80
White Enamel		S-7879	5.00	5.10	2.85
White Enamel		S-7936	4.60	4.70	2.75

F.O.B. SF
TERMS 2% 10 days

Some purchasing departments maintain a separate price record, arranged according to products and with a separate sheet or card for each supplier.

castings or of setting up and operating a foundry department. The same problem may come up for decision in respect to practically every component.

The answer is not always a simple one. It involves many considerations—of investment, management, capacity, quality control, and the essential nature of the business, to mention only a few. And if the decision is to procure by manufacture instead of by purchase, it does not simplify the purchasing program. Generally it works out quite the reverse. The Purchasing Agent may be relieved of the job of buying castings, but he acquires the responsibility of purchasing foundry equipment and supplies and raw materials, and is immediately faced with the question of whether to buy and operate his own sources of coal and ore and limestone, as some of the automotive manufacturers have done. This example has purposely been chosen from the field of large scale operations so as to present the problem in broad outline, but the principle applies equally to a wide variety of smaller parts and supplies. The important point to be stressed here is that it immediately sets up a criterion of cost—his own actual or estimated cost—to be compared with the purchase price that is quoted.

The second reason why Purchasing Agents look to the cost basis is that it offers the buyer an opportunity to capitalize on the efficiency of the low-cost producer, and to share in at least a portion of his commercial and technical advantages. Assuming that the cost of materials is reasonably uniform at or near the published "market", and conceding a legitimate and liberal margin of profit to keep the supplier in a strong position, to make the business attractive, and to assure continuity of supply and service, the logical differential which may be reflected in relative prices has its source in the costs of manufacture. Some progressive industrial customers have made it a practice to aid their suppliers in reducing costs to the extent of providing engineering and management counsel, and have profited by obtaining more favorable prices commensurate with the cost savings.

A Recognized Principle

The soundness of this principle of price related to cost has long been recognized in certain types of contracts calling for price adjustments in the event of changes in major raw material costs or in prevailing wage rates in an industry area as an item of production cost. The standard coal contract endorsed by the National Association of Purchasing Agents and the National Coal Association contained such a wage provision, working up or down according to mine agreements, long before the idea was popularized under the descriptive term, "escalator clause." The principle was recognized in setting the OPA ceiling prices for cotton textiles on a sliding scale dependent on changes in the price of raw cotton. The whole process of renegotiation of war contracts made by governmental procurement agencies is likewise based on this same principle. That particular adaptation of the idea is not likely to become a standard part of industrial price procedure, since it involves the right of a buyer to audit and even to define a producer's costs—a privilege which government may enjoy but which is scarcely likely to be extended to an ordinary commercial customer.

However, there are various sources from which the Purchasing Agent may derive serviceable data for price analysis. Mr. Knudsen's famous instruction to General Motors buyers to figure out a price per pound on everything they purchased is a rough but still useful start in that direction. The materials cost included in most purchases is fairly accurately determinable. Even a complicated product like an electric motor can be broken down in terms of its major components—cast iron, copper, and insulation—and the difference between that cost and the quoted price is a factor of considerable value in making price comparisons as between various prospective suppliers at any given time or in analyzing price trends over a period of time, making due allowance for changes which may have occurred in respect to the material costs.

Uses of Cost Analysis

More detailed analyses may be made with the benefit of a more accurate knowledge of manufacturing costs, competent estimates of the production operations involved, and the cost experiences of the buyer's own company on comparable operations. It should be borne in mind that price analyses do not determine prices. What they accomplish is to provide the factual data for an intelligent appraisal of value and of the reasons underlying price fluctuations, for determining what, approximately, constitutes a fair price and which prospective suppliers are "in line" or "out of line" in case there is a wide variation in quotations indicating that one or more of the bidders may be dangerously low or exorbitantly high in their estimates. Analysis is primarily a mechanism for making comparisons and to interpret the prices with which the Purchasing Agent is concerned. Figures alone do not make for sound purchasing judgment, but an understanding of what goes into the figures is essential ammunition for the buyer.

One of the things which consistent price analysis shows is that the manufacturing differential is by no means a constant factor, but fluctuates in much the same manner as the materials costs themselves. Sometimes that fluctuation may be justified by circumstances, but sometimes it is open to serious debate. For instance if the differential is on a strictly percentage basis based on material costs, similar to the percentage mark-up common to retail merchandising, rather than representing an actual unit manufacturing cost, the Purchasing Agent may be fully justified in challenging the computation. In so doing, supported by the facts of his analysis, he may not only secure a price advantage without penalizing the producer's legitimate costs and margins, but may be doing a real service by checking at the source that process of pyramiding costs which leads to inflation in the utimate consumer markets.

The purchasing department of a large utility company has charted its analyses of major equipment and supplies over a period of some years. They carry two lines across the charts, one representing catalog prices or quotations, and below it the carefully calculated cost of major component materials. The area between these two lines represents the cost of manufacture and marketing, plus profit. This area is sometimes wide and sometimes narrow. The Purchasing Agent has made it his business to find out why these variations have occurred, and has an explanation for each important change: (*narrow*) "They were hungry for business in those days; competition was terrific and you could pretty nearly write your own ticket"; (*wide*) "The union made a new contract and labor costs were sharply up"; (*narrow*) "Company A came out with a new process, and the whole industry had to fall in line; costs were down"; (*wide*) "The boys really got together here, and there was nothing we could do about it."

As a matter of purchasing policy and timing, it is obviously as important to watch these trends and to schedule purchases when the differential is narrow as

In this quotation request, five carbon copies made at a single typing are sent to five suppliers. The original is kept and used for tabulating the bids.

REQUEST FOR QUOTATIONS

KENDALL MILLS, Purchasing Department, Paw Creek, N. C.

INQUIRY No. 438

DATE

QUOTE F.O.B.

BIDS CLOSE

No.	SUPPLIERS
1	
2	
3	
4	
5	

QUANTITY	DESCRIPTION	1	2	3	4	5

Checked by _____ Purchase from Bidder No. _____ is approved

P. O. No. _____ Issued _____ _____ (Purchasing Agent)

Remarks _____

it is to watch commodity markets and to schedule purchases on that basis. The two factors together make up the price of a manufactured product.

Supply And Demand

The economic concept of price is embodied in the law of supply and demand, representing the point at which the number (volume) of willing sellers and the number (volume) of willing buyers are in balance. In a free market, if supply, or production, or sales eagerness increases to serve the same demand, the price will be depressed; while if demand increases for the same amount of available goods, the process will be reversed and the price will rise. In theory, this process is self-correcting, in that the higher price will enable marginal producers to re-enter production or will attract new producers into the field until a new balance is achieved at the higher volume, or that the lower price will attract additional buyers to absorb the higher supply. Whenever the high price makes utilization of the product uneconomic or the low price makes production unprofitable, the consumer will do without or the producer will stop producing.

In this picture, the Purchasing Agent represents demand. Individually, his influence on the situation may be very small; cumulatively it is a decisive factor, but he has little opportunity to exercise it. His one remedy is to stay out of the market, but unless the market becomes uneconomic on an industry-wide basis, that is not a practicable solution. Unlike consumer demand which, outside of a relatively limited list of essential cost-of-living items or in times of exceptionally high mass purchasing power, is a very flexible matter of personal preference or desire, industrial demand represents a definite need in the manufacturing program and a "buyers' strike" merely stops the wheels from turning.

Consequently the buyer's price responsibility under supply and demand is not to control these factors but to understand them as the economic rules of the rules of the game and to adjust his purchasing program in accordance with the developments as he foresees them. Except in the case of the highly sensitive commodities which are subject to day-to-day price fluctuations, this means a consideration of the long-range trends rather than the short-range variations—in other words, a consistent policy rather than opportunism.

Analysis of business experience over many years reveals a pattern known as the business cycle, in which the price curve traces an undulating line, rising to a peak, then declining through a more or less protracted period of business recession, and turning upward again to repeat the process. There is a purchasing cycle which follows much the same pattern. During the period of advancing prices, purchases are made in larger quantities for coverage farther in advance; during the price decline, purchases are more closely geared to immediate requirements and the "hand-to-mouth" policy prevails.

By charting actual purchases in any company against the general price curve for the same period, it is apparent how such a policy will be favorably reflected in the price performance record of the purchasing department, even though all purchases are made at the prevailing market levels at the time of the order. During the period of price decline, material costs will practically follow the course of current or replacement costs, but during the period of advancing prices, material costs over the term of actual use (represented by a horizontal line from the date of purchase and extending through the period for which coverage has been provided) will be consistently under the rising curve of replacement costs. There is nothing of speculation in such a policy, merely the intelligent application of economic knowledge.

It behooves the buyer, therefore, to know at all times just about where he stands in relation to the business curve and to forecast as accurately as he may the probable course of that curve—its present trend, the probable extent and duration of that trend, and the turning points, all correlated with his company's requirements of the materials he is called upon to buy over the same period. This is not an academic problem, but a very practical one. For the business curve is determined neither by accident nor by mathematical formula; it is the result of business and economic forces, prominent among which are the aforementioned factors of supply and demand. And no one is in a better position to know and to interpret these causes and effects than is the Purchasing Agent. We have pointed out that the business trend determines buying policies. But as a matter of fact, the monthly survey of business conditions prepared and issued for many years by the National Association of Purchasing Agents showed that purchasing policies actually anticipated the business trend by several months, and it came to be recognized as one of the most accurate of all business barometers.

What are some of the factors upon which this judgment can be based?

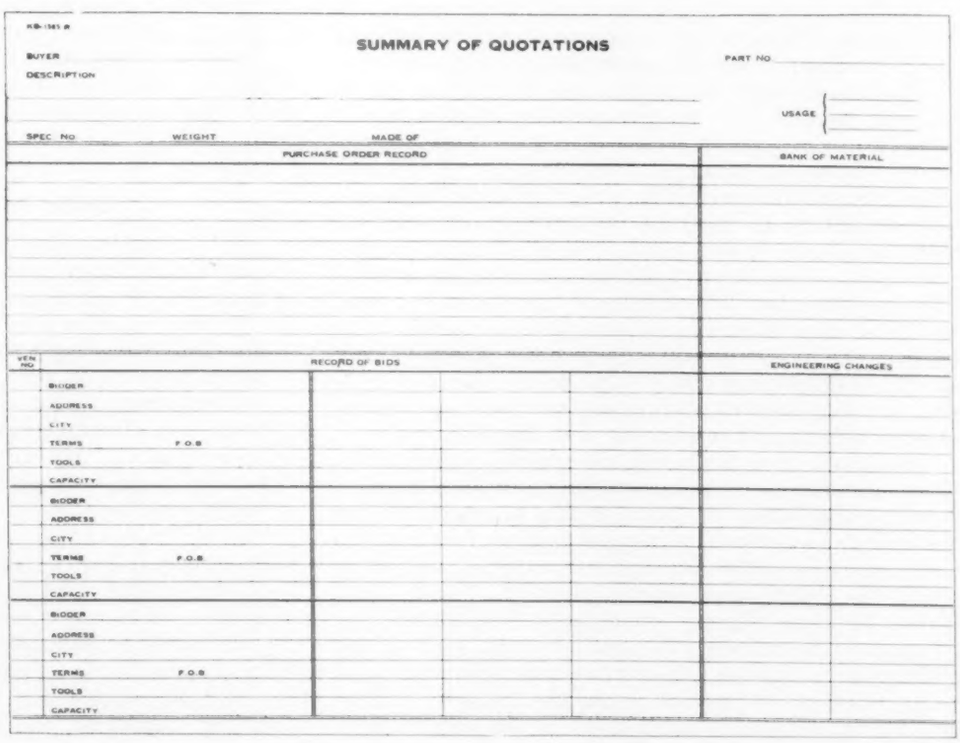
General business conditions—a broad term including, but without limitation (as the lawyers would say), the

accepted trade indices such as business activity, carloadings, department store sales, exports and imports, employment, factory payrolls, credit, new incorporations and commercial failures, all of which are regularly available through business newspapers and which are expertly interpreted by business and economic services set up for this specific purpose. Particular attention should be directed, however, to the basic statistical facts rather than to the professional interpretations. The experts do not always agree, and it is generally prudent to study and compare two or more of these services in order to get a more rounded viewpoint. In any event, it is the Purchasing Agent's own interpretation that counts, whether he follows the lead of the professional analyst or takes issue with his conclusions.

Intangibles. Psychological reactions play an important part in the development of business conditions. They optimistically push the upward trend more steeply and to higher levels, and they accentuate the depression depths. Everywhere along the curve they inject a modifying factor that may alter any purely objective analysis of the cold figures. Business conditions are a state of mind as well as a statistical matter, and each of these factors definitely affects the other. The Purchasing Agent will know the state of mind and the temper of his own organization, but it is a part of his responsibility to help mould that state of mind and to keep judgments in balance. He has a pecularily valuable opportunity to keep abreast of these intangible influences and to evaluate them, through his daily contact with the salesmen from many industries, men who have the "feel" of their industry, who are close to the actualities on the firing line of trade, men who are—as a class—impressionable and volatile by nature, and who reflect in their own atttiude as well as in the specific information at their command the business state of mind. Another excellent source is to be found in the public statements of business leaders and the lines of thought and action which they are advocating at any given time, always interpreted with due regard to the viewpoint represented and the conditions under which the statements are made. A third matter to be watched is the symptoms of labor unrest, if any; a fourth consideration is the attitude of government toward business, and *vice versa.*

Conditions in a particular industry—the industry producing the commodity in which the buyer is interested. General business conditions provide the background against which the broad outline of trends is sketched. But every individual industry has problems of its own. There will aways be some which run counter to the general trend, some which run ahead of the boom or lag behind the depression, and some which pursue the even tenor of their way. There are reasons for such conditions, which the Purchasing Agent ought to know: technological developments, financial strength or weakness, labor relations, growing or recessive industries, and special economic problems. And breaking down his analysis still further, there is a similar study of particular companies within the industry—the companies in which the Purchasing Agent is interested as prospective suppliers. A careful persual of annual statements is sometimes highly enlightening.

Supply—including potential capacity, new facilities, actual production, stocks on hand, imports, location of supplies and the transportation facilities available to bring them to his plant; and the same information regarding competitive materials which may be alternatively used. Some of this data is avalaible from government studies issued by the Department of Commerce and the Bureau of Mines, and from the crop reports of the Department of Agriculture. Some of it is available from industrial associations. Some has to be dug out more laboriously and pieced together to form an accurate picture. The wartime transportation of petroleum products illustrates the need for interpreting the basic statistics. For the user on the eastern seaboard, submarine warfare, the allocation of steel for the transcontinental pipeline, the shortage of tank cars, and flood conditions in the Southwest disrupting pipeline operation, were all factors of immediate concern affecting supply, but for the user in the central sections of the country those particular factors were not particularly significant.



SUMMARY OF QUOTATIONS

BUYER
DESCRIPTION
PART NO
USAGE
SPEC NO
WEIGHT
MADE OF

PURCHASE ORDER RECORD	BANK OF MATERIAL

VEN NO	RECORD OF BIDS				ENGINEERING CHANGES	
	BIDDER					
	ADDRESS					
	CITY					
	TERMS F.O.B.					
	TOOLS					
	CAPACITY					
	BIDDER					
	ADDRESS					
	CITY					
	TERMS F.O.B.					
	TOOLS					
	CAPACITY					
	BIDDER					
	ADDRESS					
	CITY					
	TERMS F.O.B.					
	TOOLS					
	CAPACITY					

The tabulation of competitive bids may be a very informal operation, but careful analysis is aided by using a form similar to this one, which presents the detailed story of each quotation in parallel spaces for easy comparison, and becomes a part of the permanent record.

Demand—including sales, unfilled orders, consumption, exports, seasonal and style factors, activity in consuming fields (as, for example, the rate of building construction), new applications of the product and trends toward the use of other materials, and purchasing power which makes demand effective. The Purchasing Agent will be especially interested in his company's own manufacturing program, which represents his particular and concrete part in the general picture of demand. He can gain some very pertinent and enlightening information by talking the situation over with his own Sales Manager and analyzing sales quotas and outlook, which are the basis of materials requirements. It is more than likely that the Sales Manager will have a pretty good idea of the sales and production plans of his principal competitors, or at least a fairly accurate estimate of what porportion his own sales will bear to the total industry output. Any extraordinary conditions of demand, calling for sharply increased quantities or diverting supplies into unaccustomed channels, will naturally be considered. The war production program and the necessity of maintaining our own armed forces and the economy of our allies throughout the world, is the obvious example of such a development which has completely disrupted the normal analysis of demand.

Regulations—by government or cartel, in our own country or abroad, may directly affect supply, demand, or price; indirectly they all affect price. An understanding of actual and probable activities in this direction is essential in arriving at a well-founded judgment regarding prices.

Put all these factors together and you have, not a price, but a summary of the economic factors which determine or influence prices and price trends. It is a part of the Purchasing Agent's job to keep himself informed on these matters. Without that information, he is not in a position to formulate a sound and economical purchasing program that will keep his company in a favorable competitive position with respect to material costs.

Competitive Prices

The third theory of price is that it is determined by competition. This must be accepted only in conjunction with the two considerations already discussed, i.e., on the assumption that supply and demand conditions are such as to create a market and to establish a general price level reasonably above the cost of production. Given these fundamental conditions, it is common knowledge that there will be some variations in price—and sometimes an amazing variation—as between various suppliers. It is a part of the Purchasing Agent's job to discover these variations and to understand them, and to place his company's business at the most favorable price that will not otherwise jeopardize even more important considerations such as quality or continuity of supply, and that will not entail additional costs due to manufacturing difficulties, excessive spoilage or rejects, interrupted production, and the like.

Some of these variations are readily understanble. There may be lower manufacturing costs due to cheap power, cheap labor, strategic location in respect to raw material or to markets, better processes or better equipment, more complete mechanization, large volume of operations, highly specialized skills, etc. It may be a matter of more efficient management and marketing. There may be commercial considerations, such as the willingness to operate on narrower margins merely to cover overhead on excess production capacity and to maintain a working organization, or the eagerness to break into a new market or a new customer (which obviously offers no *permanent* advantage to the buyer), or the destructive "price war" to discipline a competitor or drive him from the field (which is even worse). It may be a "job lot" proposition, for which there is a legitimate outlet, but which is generally eschewed by the Purchasing Agent who values uniformity of product and assurance of continuing supply from his regular vendors. Or it may be due to an ignorance of true costs.

The procedure favored by most Purchasing Agents is:

(1) To insure that there will be competition, by establishing two or more sources for every product bought. The specification which is built around one supplier's product to the exclusion of all others is to be avoided, both from the standpoint of assured supply and of price. When a new item comes up for purchase, it is generally good policy to accept the recommendation of the requisitioning officer or department on the initial order as to brand or source, thereby saving time and starting with a product known to the user and sure of acceptance. But that is only the starting point in a constant search for the *right* material from the *right* source at the *right* price. No Purchasing Agent should be satisfied until he has found an alternative source, no matter how satisfactory his original source of supply may seem.

(2) To establish these two or more (the usual maximum is from six to eight, or up to a dozen in exceptional cases) sources as an approved list of suppliers, based on test and acceptance of their product by the using department, so that orders may be placed with *any one* of these potential suppliers with confidence that deliveries will be satisfactory in every respect and acceptable to all departments of the company. Under these conditions the selection of any particular supplier from the approved list is, without question, a purchasing problem and a purchasing prerogative.

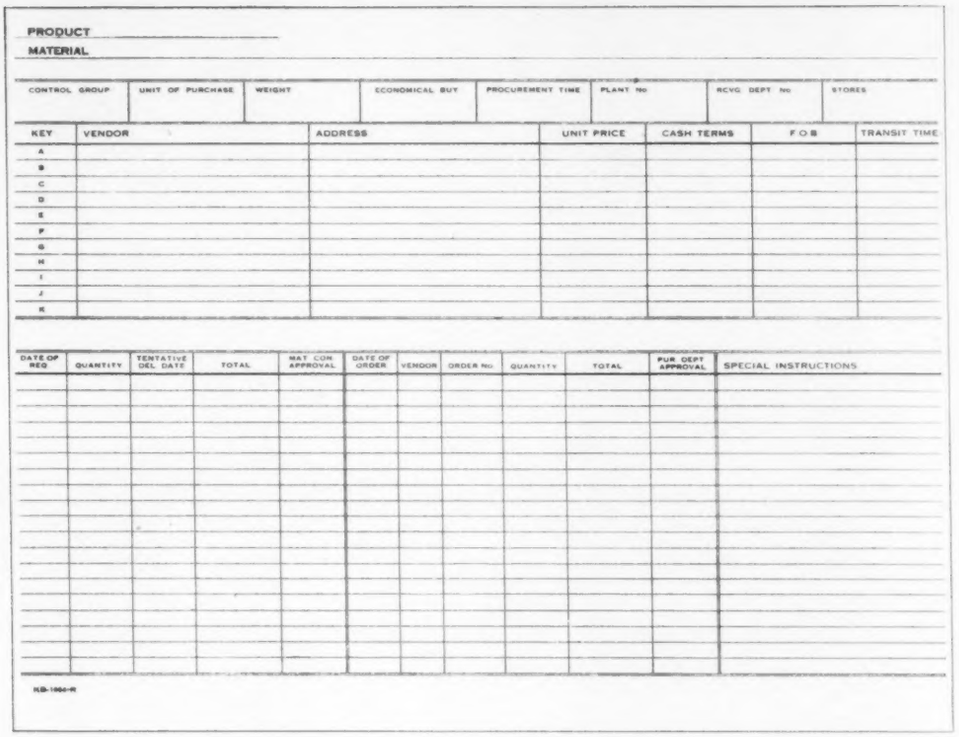
(3) To maintain competition within this group of suppliers. These are the vendors whose prices are kept on file, and who will be asked to quote in case such a procedure is indicated. Presumably there will be a reasonable division of the business among those who are in a fairly even competitive position, for a supplier's name on a list has significance only when he is permitted to supply. Presumably, also, the business will go to the low bidders, not as a matter of "price buying" but because the other considerations have already been disposed of.

Using The "Approved List"

The existence of a relatively limited list of potential suppliers for a purchase item, as outlined above, does not imply that the purchasing department has blacklisted any supplier who does not happen to be included, nor that it has definitely closed the door to other sources which might prove to be even more advantageous. In a purely mechanical application of the system, such a result might unfortunately ensue, and it is one of the dangers against which the Purchasing Agent must guard in fairness to his own performance as well as to other potential suppliers. That is true of any case where a routine or system is established for an operation which is essentially one of judgment and decision. The purpose of having such a list is rather to assist judgment and to avoid a lot of waste motion.

It should be remembered that this plan is designed to handle regular (i.e., repetitive) items of purchase, on which the expense and time and labor involved in procuring, tabulating, and analyzing voluminous bids from

A comprehensive form of purchase record combines on a single 11 x 8 card, not merely the record of orders placed, but the complete buying information including a list of approved suppliers for the item and a comparison of current price quotations from each of them.



PRODUCT _____

MATERIAL

CONTROL GROUP	UNIT OF PURCHASE	WEIGHT	ECONOMICAL BUY	PROCUREMENT TIME	PLANT No	RCVG. DEPT. No	STORES

KEY	VENDOR	ADDRESS	UNIT PRICE	CASH TERMS	F.O.B	TRANSIT TIME
A						
B						
C						
D						
E						
F						
G						
H						
I						
J						
K						

DATE OF REQ	QUANTITY	TENTATIVE DEL. DATE	TOTAL	MAT. CON. APPROVAL	DATE OF ORDER	VENDOR	ORDER No.	QUANTITY	TOTAL	PUR. DEPT. APPROVAL	SPECIAL INSTRUCTIONS

KB-1000-R

a more extensive list would serve little purpose and might easily outweigh any advantages obtained; that it is a timesaving device specifically adopted to eliminate this repetition of research on every purchase, but without sacrificing the essential competitive element; that it is compiled presumably after the Purchasing Agent has surveyed the field thoroughly and carefully, so that the limited list represents the group of suppliers who are probably his best potential suppliers; that the list is always subject to revision or to extension as conditions change or as new sources are uncovered; and that the Purchasing Agent has a continuing responsibility to see that his "approved list" is comprehensive and adequate to serve its intended purpose.

Nor should this system be at all discouraging to sales effort. The normal and logical sales procedure in any case is for the prospective vendor to establish himself as a satisfactory source of supply as a necessary preliminary step toward a business relationship—which is just another way of saying that he is trying to win a place on the roster of those whom the Purchasing Agent thinks of when he receives a purchase requisition to fill. There is nothing in this type of procedure to preclude the presentation of all pertinent sales information and argument, the submission of samples, and fullest discussion. The response that "We are well satisfied with our present suppliers" is evidence of a successful purchasing program and a highly desirable procurement situation, but it does not follow that the Purchasing Agent is not open-minded, or even eager, to improve that position.

There are various ways in which the Purchasing Agent keeps his supplier lists up to date and checks, for his own benefit, their quality and adequacy. In one large railroad purchasing department, where inquiries are usually sent to eight listed suppliers per item, it is the practice to review these lists annually, and more or less arbitrarily to add two new names in place of two which have been previously on the list. For practical reasons of procedure, it is not considered desirable to increase the number of names, but the analysis generally discloses that for one reason or another very little business, or no business at all, has been placed with one or two of the listed suppliers. They may have been consistly high bidders, for example, or unwilling to bid, or deficient in their delivery promises. Obviously, under such circumstances, they do not represent effective competition or a really useful potential source, and their names are removed to make room for some other supplier who promises greater potentialities. If trouble has consistently been encountered in respect to either product or service on orders placed, that too would be a proper cause for revision. Such conditions may affect more than two suppliers out of the eight, and if suitable replacements are known to the purchasing department, as a result of sales solicitations or of their own research, a greater number of substitutions may be made. The policy of advocating at least two changes is adopted not to secure turnover for its own sake, but in the effort to improve the list by removing the least useful and desirable names and introducing new competition without disturbing the assured sources. Theoretically, at least, there is always effective competition and assurances of satisfactory supply from six proved sources. The new companies have a year in which to prove themselves; at the end of that period they may be retained on the permanent list or they may give way to another supplier on trial. There is nothing in this plan to prevent a lasting relationship, but the supplier must earn that position by giving service and by keeping his price in line.

Few companies have as definite a policy as this, but it is quite customary to send an occasional inquiry to a more extensive list with a view to checking against the prevailing quotations, and always with the possibility of discovering new sources or potential economies.

While the securing of competitive prices is very generally accepted as an element of sound purchasing practice, it is by no means universal. An extensive survey made by the National Association of Purchasing Agents indicates that considerably less than 25% of industrial concerns require competitive bidding on all or even on the majority of purchases, and that the decision of whether to employ this method or not is left to the discretion of the Purchasing Agent in most instances. More than half of the companies permit orders for com-

mon and repetitive items, purchased from regular suppliers, to be placed even without showing a price on the order. Most purchasing departments prefer, as a matter of policy, to have a definite price shown, as one of the basic terms of the contract, and the presumption is that the last previous price will prevail unless notice is given to the contrary.

The formal search for price competition is usually waived on:

(a) Orders which represent a very small expenditure, where the cost of securing quotations would not be justified—another case in which ultimate cost is not represented by the invoice price alone. In some cases this principle is defined and standardized by setting a definite monetary limit below which competition is not required.

(b) Orders for emergency supplies and repair parts, where time rather than cost is the important factor.

(c) Miscellaneous items on which no real competition exists in any case, such as replacement parts that must be secured from the original manufacturer, items made under patent or licensing agreements or marketing through exclusive distributorships, trademarked goods for which there is no acceptable alternate, etc.

Competitive prices do not necessarily mean that formal bids have to be secured. There is a wide range of materials and products covered by catalog prices or discounts from standard trade lists, or on which the supplier is willing to file a price that will have the force of a firm quotation until he advises the purchaser of a change. Where such information is recorded or is available from lists or catalogs, the basis for price comparison is present without the necessity or calling for specific quotations on each separate purchase.

In some purchasing departments, this information is carried in a separate price record or price file, arranged according to commodities and showing the comparative prices, item for item, as offered by various suppliers, so that reference to this record when a purchase is contemplated will provide the desired data. Its value is of course dependent on keeping the information strictly up to date, and some one in the department should be assigned the definite responsibility of posting the information to the proper record whenever new lists or catalogs are issued, and whenever correspondence relating to prices and terms is received.

Price records are frequently incorporated in the purchasing record, which includes the list of approved vendors and the tabulation of previous orders, rather than maintaining a separate file for quotations. In addition to simplicity—one record instead of two—this has the advantage of showing the whole picture of previous experience, the distribution of orders, and prices paid on former transactions over a period of time. Sometimes the purchase record alone is regarded as a sufficient guide to price data. Orders may be issued on the basis of this record, asking the vendor to advise the buyer if there is to be any deviation from the price paid on the previous order, and making the order conditional on acceptance at that price.

Securing Quotations

On new and non-standard items, it is advisable to secure specific quotations. Also, if time permits, on important quantities of standard items, and of course whenever that procedure is mandatory because of company policy or the size of the order. A special "Request for Quotation" form is generally used for this purpose, and in a purchasing department of any size this is preferable to making the request in letter form. It is simpler to issue, and simpler in procedural handling when the quotations are received.

In sending out requests for quotations, a date should be set indicating the latest time at which bids will be received and considered. This avoids undue delay in arriving at a decision, and assures all bidders of equal consideration provided they are prompt in making their quotation. In bidding on governmental orders and contracts, the deadline is set very precisely, at a given place and hour, and the sealed bids are not opened until the formal, public opening, at which bidders are invited to be present. The purpose of this is to avoid any possible taint of favoritism, to discourage collusion, and to prevent sharp practice of last-minute bidding just low enough to get under a competitor's posted price.

Price Factor In Selection

In governmental buying, the Purchasing Agent is generally required by statute to award the order to the lowest bidder, unless he is definitely disqualified under the conditions of the bid. If identical low bids are received, which is by no means an uncommon occurrence, he may decide the award by the toss of a coin, or reject all bids and start over again.

Purchasing Agents for private industry are not under the same compulsion to select the lowest bidder, price being but one of several factors on which he may base his decision. It is, as we have noted, an important factor, and it is also true that competition tends to set market levels, but it is not necessarily a controlling factor. In studies of actual purchase records, it will be found that as often as not, the lowest bid may be rejected, provided there is some other factor or reason suggesting considerations of greater importance to offset the initial price advantage. He does, however, have a reason, and the burden of proof is on the buyer to show his management why the additional cost is justified.

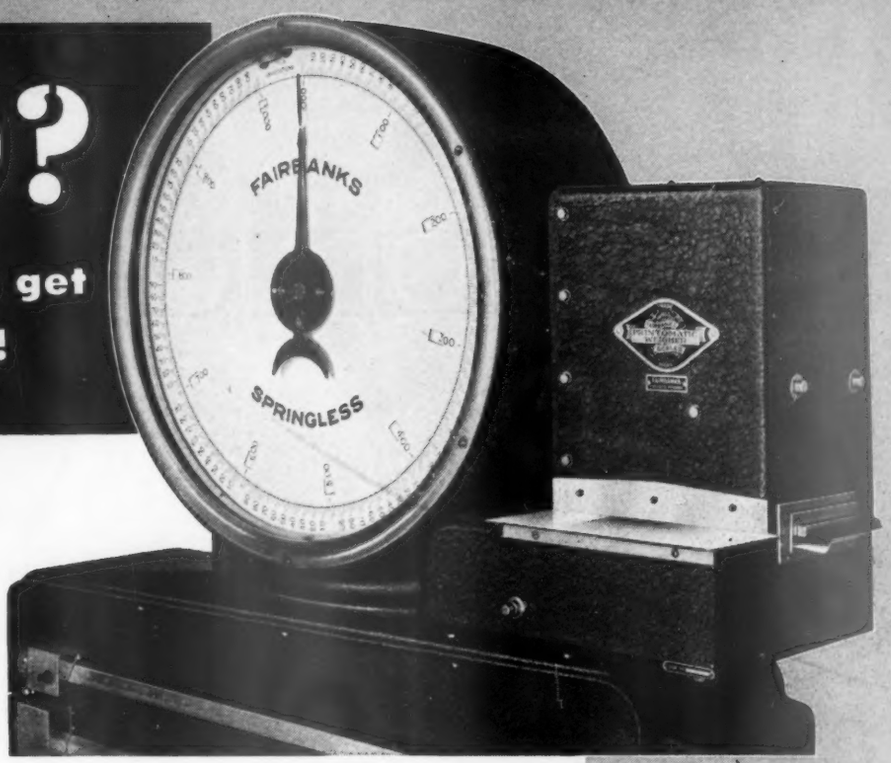
Some of these considerations have been detailed in an earlier section of this article. In addition it should be noted that in the case of a wide variation in quotations, it is no more sound to assume that the high price is exorbitantly high than to assume that the low price is excessively low and open to suspicion on that ground alone.

The analysis of prices will of course take into consideration the cost of delivery, trade discounts, quantity discounts, cash discounts, and similar factors affecting the ultimate price to the company. It should not be assumed that because price is one of the last elements to be considered in a purchase, the buyer's attitude is one of altruism. On the contrary, it is his responsibility to realize every legitimate saving and price advantage for his company, and it is also true that when other factors of reliability, quality, uniformity, delivery and service are satisfactory, and as between alternative approved suppiers, price determines who shall get the order. In purchase negotiations for new or special items, where routine competitive bidding is not sufficient, price is discussed along with design, materials, adaptability, application, etc., and the consideration of those factors looks both to suitability and cost.

Next Month: Purchasing Research

GOOD?

They have to be to get where they are!

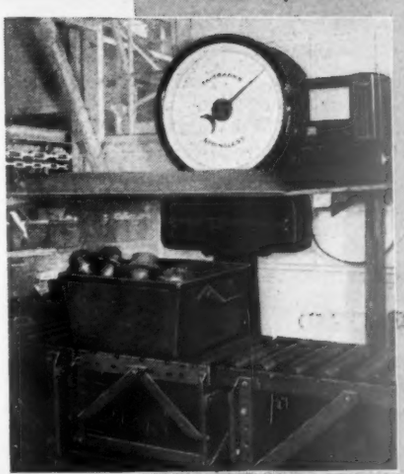


In good light or bad . . . operated by experienced weighmen or novices . . . weighing all kinds of commodities . . . Fairbanks Printomatic Scales have proved to the world that they have what it takes! They eliminate human errors, speed up weighing operations, and provide a PRINTED record showing what was weighed, who weighed it, and when.

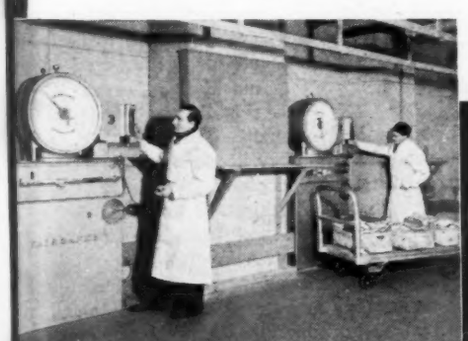
Fairbanks Scales have proved their reliability through their 113 years of service. Each part, carefully designed for its specific function and built with precision, guarantees your incoming, outgoing, and processing weight operations.

The Printomatic records the correct weight automatically, prints it on a roll tape, weigh ticket, or combination of both, or on gummed tickets. Adaptation of Fairbanks Printomatic Scales to weighing problems, simple or complicated, is practically unlimited. Why not investigate what these scales can do for you? Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago, Ill.

★

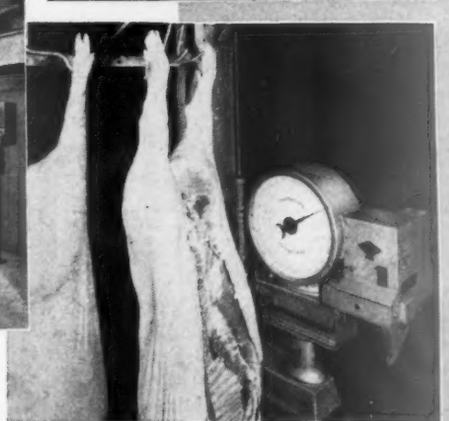


Fairbanks Printomatic Conveyor Scale → keeps printed record of piecework in foundry.



↑ Fairbanks Printomatics recording meat shipments to retailers. Each of 221 different kinds of meat is given a designating number.

↑ Fairbanks Coal Mine Car Scale with Printomatic weighs mine cars in motion, protecting employer and miner.



Fairbanks Portable Dial → Scale with Printomatic weighing and printing records of meat to retailers.

FAIRBANKS-MORSE

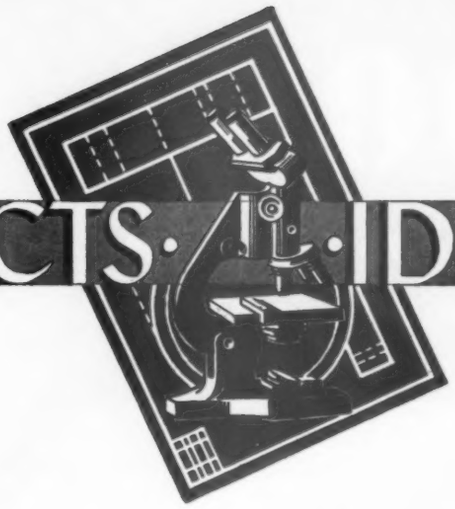
DIESEL ENGINES
PUMPS
MOTORS
GENERATORS
SCALES

WATER SYSTEMS
FARM EQUIPMENT
STOKERS
AIR CONDITIONERS
RAILROAD EQUIPMENT

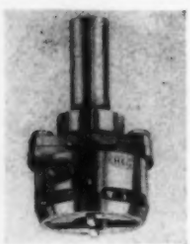
FAIRBANKS SCALES

Scales

New PRODUCTS · IDEAS



ADJUSTABLE DIE HEAD



NEW style of solid adjustable die head has been developed for use on all sizes of Brown & Sharpe automatic screw machines by Eastern Machine Screw Corp., New Haven, Conn. They are known as style SAML. The die heads are said to be extremely light in weight, relatively small in diameter and relatively short. Light weight of the die head is said to add materially to chaser life and thread quality. Chasers are easily removable for regrinding. Heads have no moving parts. Once adjusted to size they hold that size.

IMPROVED WELD CLEANING TOOL

IMPROVED weld cleaning tools manufactured under the trade-name Dual-Tool, is announced by the Atlas Welding Accessories Co., Boulevard Bldg., Detroit, Mich. It combines a wire bristle brush and a slag revolving bit in one unit and features a special brush holder which premits removal of brush for reversing or replacement. Every part of the tool is replaceable. Circular gives further details.

COPY HOLDERS FOR OFFICE WORKERS

FOR use by typists, bookkeepers, cost clerks and other office workers, copyholder made of non-essential war materials is announced by Franklin Black & Co., 8900 Beverly Boulevard, Los Angeles, Calif. Panels are of binders board and binders cloth, and copy ledge is of wood. Line indicator is of celluloid. Made in three widths—9½", 12½" and 18½". Folds compactly to fit into drawer.

LEATHER MODERN DESIGN V-BELT

NEW application of the old and accepted engineering principle of flat, full grain leather in contact with pulley sheaves is reported to have been put in a V Belt by the Chas. A. Schieren Co. Schieren has built flat leather side walls to a leather core and produced a long-lived V-Belt said to be minus the faults of old style belts. Flat leather walls makes slack running possible; belt does not slip. Dismantling of machines for belt changes and adjustments are claimed to be largely eliminated by the new belt, nor is removal of outboard bearings necessary. Belts are available through the customary channels of supply.

RECHARGEABLE FLASHLIGHT BATTERY

RECHARGEABLE flashlight battery to fit all popular two cell, 1¼" size D Flashlight cases is being marketed by Storage Battery Divn., Ideal Commutator Dresser Co., Sycamore, Ill. Heavy duty service has demonstrated that it is long-lived and economical. According to manufacturer, each battery can replace up to 400 or more dry cells, through recharging at convenient periods. Battery charges are available for this purpose both in single and gang types, for use on both alternating current and direct current.

MULTIPLE THREAD MILLING CUTTERS

A LINE of multiple thread milling cutters in National, Whitworth, Acme, V, and special forms, is announced by the Plan-O-Mill Corp., Hazel Park, Mich. They are available ground or unground, with straight or spiral flutes, with or without special tooth for removal of imperfect thread, in a complete range of sizes.

PLASTIC FIREHOSE NOZZLES

PLASTIC nozzles, precision molded, are announced by American Molded Plastics Co., 1751 No. Honore St., Chicago, Ill. They are said to be corrosion proof, nondenting, highly resistant to acid and alkalis, liquids and water content, and hold their shape. Two types are produced. No. 1 for two-way or split stream, to form a spray when needed, or a one-way stream. No. 2 is the one-way, straight-stream nozzle, one piece molding. Both are furnished for standard hose sizes of fire extinguishers, stirrup pump tanks, etc.

NEW TYPE METAL CUTTING OILS

NEW oils recommended for use on practically all metals for cutting and machining operations have been developed by the National Oil Products Co., Harrison, N. J. They are said to impart increased oiliness, copious wetting and cooling ability, and resistance to rust and corrosion, oxidation and rancidity. The oils are styled Vegicut A, and B, Vegisol, an emulsifying cutting oil readily soluble in a wide range of waters; and Vegisulph a sulphurized product providing maximum anti-welding protection.

ENCLOSED TRI-CLAD MOTORS

NEW line of totally enclosed Tri-Clad motors is announced by the Motor Division of the General Electric Co., Schenectady, N. Y. Available in both the polyphase, 60-cycle, induction type and the single-phase, 60-cycle, capacitor type, the new motors are especially designed for use under conditions where abrasives, chemi-

TUBE-TURN WELDING FITTINGS—RANGE OF SIZES

Type of Fitting	Description	Standard Weight	Extra Strong	Schedule 160	Double Extra Strong	Light Gauge: Nominal Pipe Size	Light Gauge: Iron Pipe Size
Elbows	90° Long Radius	½"-24"	¾"-24"	1"-14"	1"-8"	4"-24"	3"-12"
Elbows	90° Short Radius	1"-30"	1½"-30"				
Elbows	45° Long Radius	½"-30"*	¾"-30"*	1"-14"	1"-8"	4"-24"	3"-12"
Returns	180° Long Radius	½"-24"	1"-24"	1"-14"	3"-8"		
Returns	180° Short Radius	1"-30"	1½"-30"				
Returns	180° Extra Long Radius	1"-2½"	1"-2½"				
Tees	Straight	½"-24"	½"-24"	1"-12"	1"-8"		
Tees	Reducing Outlet	¾x¾x¾-24x20	¾x¾x¾-24x20	¾x¾x¾-12x10	1x¾-8x6		
Reducers	Concentric & Eccentric	1x¾-24x20	1x¾-24x20		1x¾-8x6		
Caps		¾"-24"	¾"-24"		1"-8"		
Stub Ends	Lap Joint	¾"-24"	¾"-24"				
Nipples	Shaped, 90° to Header	1¼"-12"	1¼"-12"				
Nipples	Shaped, 45° to Header	1¼"-12"	1¼"-12"				
Saddles		2"-24"					
Laterals	Straight	1¼"-24"	1¼"-24"				
Laterals	Reducing	1¼"-24"	1¼"-24"				
Crosses	Straight	¾"-24"	¾"-24"				
Rings	Welding	¾"-12"	¾"-12"				
Sleeves	Welding	2"-24"					

SUPER Tube-Turn 45° long radius elbows, 90° long radius elbows, and 180° long radius returns available in both Standard weight and Extra Strong in sizes from 3" to 12".

Tube-Turn welding fittings and flanges conform to applicable ASA and ASTM Standards. For further details please refer to Tube Turns catalog and data book No. 111.

*30" size short radius.

TUBE-TURN FORGED STEEL FLANGES—RANGE OF SIZES

	150 Lb.	300 Lb.	400 Lb.	600 Lb.	900 Lb.	1500 Lb.	2500 Lb.
Welding Neck	½"-24"	½"-24"	½"-24"†	½"-24"	½"-24"*	½"-24"	½"-24"
Slip-On	½"-24"	½"-24"	½"-24"†	½"-24"	½"-24"*	½"-24"	½"-24"
Lap Joint	½"-24"	½"-24"	½"-24"†	½"-24"	½"-24"	½"-24"	½"-24"
Threaded	½"-24"	½"-24"	½"-24"†	½"-24"	½"-24"*	½"-24"	½"-24"
Blind	¼"-24"	¼"- 4"		¼"-3½"			
Socket Type	¾"-24"	¾"-24"	¾"-24"	¾"-24"	¾"-24"	¾"-12"	¾"-12"
Reducing-threaded or slip-on		1"-24"	4"-12"	4"-12"	3"-12"	1"-12"	
Orifice—threaded		1"-24"					
Orifice—slip-on		1"-24"	4"-12"	1"-12"	3"-12"	1"-12"	
Orifice—welding neck		1"-24"	1"-10"	1"-10"	1"-10"	1"-10"	
Long Welding Neck	1"-24"	1"-24"					

†Dimensions on sizes thru 3½" same as for 400 lb. flanges.
*Dimensions on sizes thru 2½" same as for 1500 lb. flanges.

TUBE-TURN
TRADE MARK

Welding Fittings and Flanges

The FIRST WELDING FITTINGS 1ST AND STILL THE BEST

TUBE TURNS (INC.) LOUISVILLE, KY. *Branch offices:* New York, Chicago, Philadelphia, Pittsburgh, Cleveland, Dayton, Washington, D. C., Houston, Los Angeles. *Distributors in principal cities.*

B-H INSULATING CEMENT

Test blocks show the difference between corrosive action of B-H INSULATING CEMENT and ordinary insulating cement.

HAS LICKED CORROSION

Rust takes it on the chin!

A perfect bond — that's the beauty of Baldwin-Hill Insulating Cement. How often have you found that moisture in ordinary insulating cement sets up a rusting action releasing the bond, causing peeling and falling?

B-H Insulating Cement is non-corrosive, whether it dries immediately on a hot surface or is allowed to air-dry over a long period of time. On application involving wire this is more important than ever with galvanizing "out" for the duration.

With the famous B-H *black* rock-wool as a base, B-H Insulating Cement is the ideal maintenance insulation effective up to 1800° F. Mixed with water the tightly rolled pellets of wool do not lose their physical form, and so the countless number of entrapped dead air cells within these pellets provide maximum insulating efficiency. B-H No. 1 is easy to apply because it has an exceptionally high adhesive characteristic, and gives high coverage with a very minimum amount of shrinkage.

These advantages of B-H Insulating Cement are real advantages that result in worthwhile savings. Why not let us send you a generous free sample so that you can make your own tests? Write us now on your business letterhead.

BALDWIN-HILL COMPANY
•
Insulations

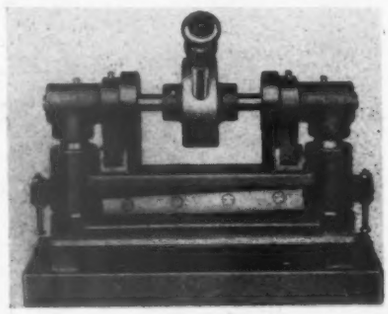
562 KLAGG AVE.
TRENTON, N. J.

Branches In:
NEW YORK • CHICAGO
KALAMAZOO

(Continued from page 112)

cals, rain, snow and excessive dirt are encountered. Motors are featured by protection against physical damage, electrical breakdown, and against normal operating wear and tear. Frame, and shields and conduit boxes are cast iron, offering exceptional resistance to rust, corrosion, accidental blows and rough use.

IMPROVED DI-ACRO SHEAR



O'NEIL-IRWIN Mfg Co., Minneapolis, Minn., announce improved Di-Acro shear No. 2, which is stated to incorporate all of the features of universality of a wide operating range, as well as accuracy and possibilities of working to die tolerances. Accuracy is guaranteed to tolerance of .001" in all duplicated work. Maximum shearing width 9"; maximum shearing capacity, full width, 22 gauge steel plate. Shear blades are reversible. Shear can be quickly arranged for shearing, slitting, squaring, stripping or notching to extremely close tolerances. All ductile and pliable metals and materials can be accurately worked including the very lightest of tissues. Die accuracy is readily provided by adjustment of material guides, blade pitch and stops

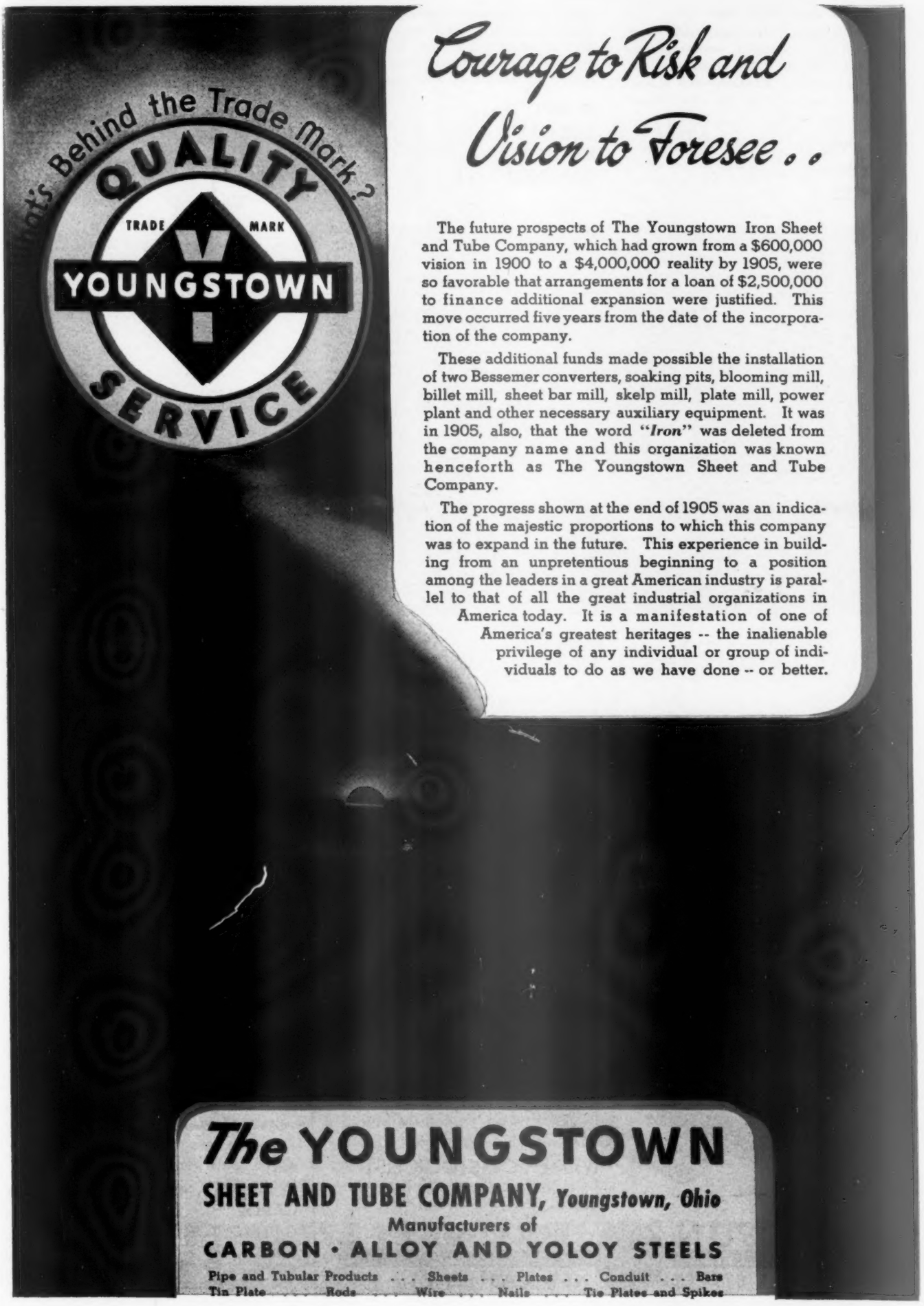
PLASTIC SEALED BADGES

PLASTIC sealed armbands, identification badges, tool checks, and similar identifying devices are announced by the Plastic Division of the Hollywood Athletic Co., 211 E. 7th St., Los Angeles, Calif. The items are said to be completely waterproof, practically soilproof, strong and durable. Variety of stock designs available in different shades and colors.

HARD CHROME PLATING ALUMINUM

SOLUTIONS for applications of hard chrome plating to aluminum are announced by the Technical Processes Division of Colonial Alloys Co., Philadelphia, Pa. Method is said to be simple and consists of a preparatory dip of the aluminum into an alkaline solution for about a minute at room temperature.

(Continued on page 116)


What's Behind the Trade Mark?
QUALITY
TRADE MARK
YOUNGSTOWN
SERVICE
Courage to Risk and Vision to Foresee . .
The future prospects of The Youngstown Iron Sheet and Tube Company, which had grown from a $600,000 vision in 1900 to a $4,000,000 reality by 1905, were so favorable that arrangements for a loan of $2,500,000 to finance additional expansion were justified. This move occurred five years from the date of the incorporation of the company.
These additional funds made possible the installation of two Bessemer converters, soaking pits, blooming mill, billet mill, sheet bar mill, skelp mill, plate mill, power plant and other necessary auxiliary equipment. It was in 1905, also, that the word "Iron" was deleted from the company name and this organization was known henceforth as The Youngstown Sheet and Tube Company.
The progress shown at the end of 1905 was an indication of the majestic proportions to which this company was to expand in the future. This experience in building from an unpretentious beginning to a position among the leaders in a great American industry is parallel to that of all the great industrial organizations in America today. It is a manifestation of one of America's greatest heritages -- the inalienable privilege of any individual or group of individuals to do as we have done -- or better.
The YOUNGSTOWN
SHEET AND TUBE COMPANY, Youngstown, Ohio
Manufacturers of
CARBON · ALLOY AND YOLOY STEELS
Pipe and Tubular Products . . . Sheets . . . Plates . . . Conduit . . . Bars
Tin Plate . . . Rods . . . Wire . . . Nails . . . Tie Plates and Spikes

(Continued from page 114)

Plating thicknessse have been made up to .050" without hydrogen embrittlement, crazing, lifting, etc. The application aplies to all forms of aluminum and aluminum alloys, including all the cast, forged and wrought forms.

NEW TYPE H MOTOR STARTER

TYPE H-motor starter is new addition to industrial control line of the Allis-Chalmers Mfg. Co., Milwaukee, Wis. New starter is a metal enclosed structure similar to metal-clad switchgear. It is said to protect motor from sustained overload, locked rotor condition, single phasing and overloading caused by too frequent starting by means of thermal overload relay accurately calibrated.

HORIZONTAL PARALLEL SHAFT TYPE GEARMOTORS

NEW line of horizontal parallel shaft type gearmotors which meet speed reduction requirements for a wide variety of industrial applications over a range of 1 to 75 hp is announced by Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Each new unit conforms to A. G. M. A. standard output speeds and application practices. The new gearmotors feature compactness and improved foundation stability through heavy exterior ribbing of the housing at each mounting hole. For further information write Department 7-N-20.

NEW ELECTRICAL RECTIFIERS

RECTODYNE is the name of new electrical rectifier announced by McColpin-Christie Corp., Ltd., Dept. J-543, 4920 So. Figuero St., Los Angeles, Calif., which is claimed to have many advantages over generator sets for general industrial use. It can be furnished in either stationary or portable models in various capacities ranging up to 4,000 watts, and is said to provide smooth DC power for such purposes as aircraft testing, engine starting, operating DC motors, charging industrial and military batteries, electrolytic processes, arc lamps, etc. Dual voltage feature is available which permits doubling the DC capacity at half voltage by means of series-parllel switch. Compact size, 16" x 16" x 29", particularly adapts the unit for test floors and air fields.

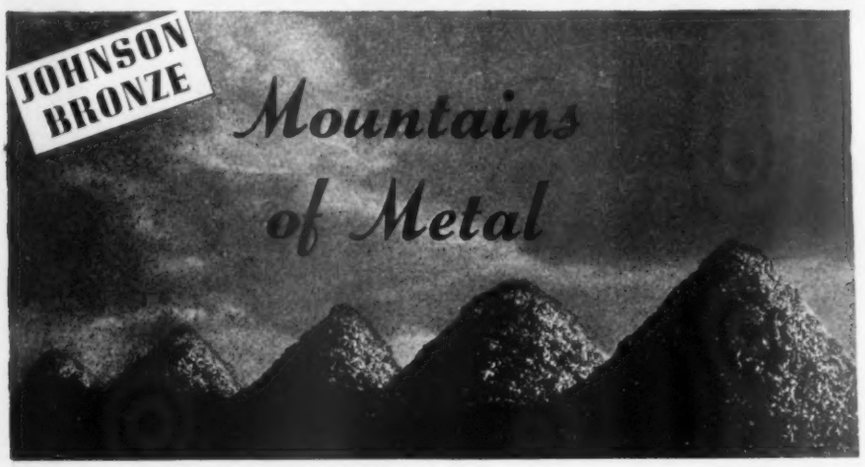
SURFACE PLATE STAND

PORTABLE, all-steel surface plate stand equipped with wheels for easy portability has been designed by the Challenge Machinery Co., Grand Haven, Mich. Comes in three standard sizes to accommodate 18 x 24" — 24 x 24" — 24 x 36" Challenge surface plates. Can be made to accommodate other surface plates. Stands are also obtainable in stationary models.

ARC WELDING CABLE CONNECTOR

A NEW cable connector that locks tight, quickly unlocks and is fully insulated has been developed for arc welding by Jackson Products, 3265 Wight

(Continued on page 118)



that could help WIN the WAR

Every time you purchase Bearing Bronze in the "rough," you buy at least 25% more metal than necessary. Quality bearing bronze contains copper, tin and lead . . . metals that are vital to our war effort. When your purchases amount to tons, you actually remove mountains of metal from the active market.

You can easily avoid this waste . . . get a higher quality product . . . save many hours of machine time by specifying Johnson UNIVERSAL Bronze. Every Johnson bar is completely machined—I. D.—O. D.—ENDS. Our range of over 350 stock sizes enables you to buy according to your needs. Why not start today to help conserve metal? Your local Johnson Distributor can give you excellent service. His name will be found in your telephone book.

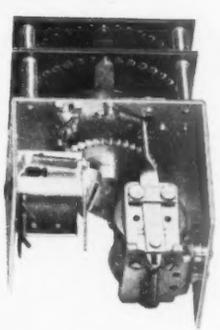
WRITE FOR STOCK LIST

JOHNSON SLEEVE BEARING 450 S. MILL STREET — The Most Complete Sleeve Bearing Service in the World — BRONZE HEADQUARTERS NEW CASTLE, PA.

RELAYS *by* GUARDIAN

★ **Instantly responsive . . . accurate far beyond the limitations of human eyes and hands . . . "Relays by Guardian" served in peacetime as "nerve centers" for intricate business machines. Today, in wartime, they help guide the plane to the target and release the bombs in a predetermined pattern.**

The Series R Stepping Relay is typical of units used in aircraft and automatic business machines. It is a versatile relay affording innumerable circuit control combinations. The contact finger will rotate clockwise, counter-clockwise, or in both directions, and may be electrically reset. Four fingers may be used on a single disc relay or two fingers per disc if two discs are required. Standard power requirements are 29 volt-amperes on AC and 14 watts on DC. A request on your business letterhead for Series R Bulletin will bring you further information.

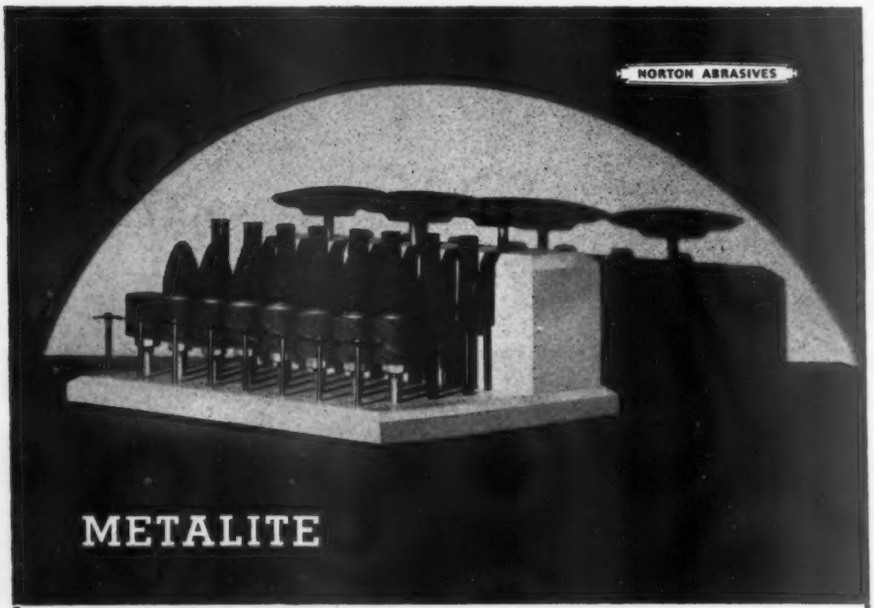


Series R Stepping Relay

GUARDIAN ELECTRIC

1635-H WEST WALNUT STREET CHICAGO, ILLINOIS

A COMPLETE LINE OF RELAYS SERVING AMERICAN WAR INDUSTRY



The "Gadgets" Production Men Talk About

▲

AND THERE'S REASON for that talk! These resilient abrasive cloth specialties on your own portable or flexible shaft tools save time, pyramid output and improve the product.

TIME IS SO VITAL that when you cut it as much as 90% on many operations, you accomplish something very worth while for your firm's war effort.

Take those tapered "Spirapoints," running at 20,000 R.P.M., for example. Picture how quickly and cleanly they smooth up odd corners, sand little recesses and knock off little burrs with an instant's lightest touch.

IT'S LIKE THAT with all the rest of these Metalite Specialties—Slotted Discs, Spirabands, Pencils and the Moulded Discs for our rubber Mushroom Pads. There's a shape, a size and a grit for every irritating, time-wasting little sanding and finishing job now slowing up some of your most important projects.

▲

You can have a demonstration right on the jobs you select. Just ask.

▲

Boston, Buffalo, Chicago, Cincinnati, Cleveland, Detroit, Grand Rapids, High Point, Indianapolis, Los Angeles, New York, Philadelphia, St. Louis, San Francisco, Tacoma.

BEHR-MANNING · TROY, N.Y.
(DIVISION OF NORTON COMPANY)
RELIABLE COATED ABRASIVES SINCE 1872

(Continued from page 116)

St., Detroit 7, Mich. It is known as the "Quik-Trik". Male and female sections are held tight by locking spring that rides the cam into position. The female section when installed on a cable lead may also be used as a holder handle.

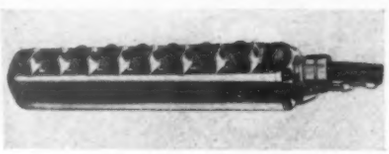
PREVENTS GALVANIZING POISONING

DANGER of poisoning by galvanizing fumes is said to be eliminated by ventilator for welders' helmets, announced by the W. H. Kitchen Co., 1107 Second Ave., Seattle, Wash. The device is attached to the headband, and introduces an even flow of fresh air into the helmet. Three to five pounds of air from any respirator line is said to be ample for complete and satisfactory operation. There is no draft on the head or face. Ventilator is said to have enabled welders to stay on job for an entire shift without discomfort from fumes.

SAFETY GOGGLE CLEANING STATION

GOGGLE Cleaning station for convenient wall mounting throughout a plant, is announced by Mine Safety Appliances Co., Pittsburgh, Pa. Station is said to encourage workers to wear their goggles and keep them clean. It consists of a compact case equipped with Fogpruf, an efficient lens cleaning and anti-fogging agent, and optical wiping tissues. Full details are given in Bulletin No. CE-20.

MULTIPLE SPEED PUSH BUTTON



MULTIPLE speed push button which provides up to five speeds in a single button, has been developed by Northern Engineering Works, 2615 Atwater St., Detroit, Mich. Battery of these buttons mounted in a pendant is illustrated. Each button provides one to five speeds on the device controlled. While designed primarily for crane and hoist operation, the button is said to be easily adaptable to any machine where pilot or relay circuits are used.

NON-RUBBER WATERPROOF SEALING TAPE

A WATERPROOF, pressure-sensitive cloth tape, which is manufactured without rubber is being marketed by Mystik Tape Division of Chi-

(Continued on page 120)

NEED STEEL?

Call us

CHICAGO,	1319 Wabansia Ave., P. O. Box MM	BRUnswick 2000 *Teletype CG. 605*
BALTIMORE,	Bush & Wicomico Sts.,	GILmore 3100 *Teletype BA. 183*
BOSTON,	176 Lincoln St., Allston, P. O. Box 42	STAdium 9400 *Teletype BRTN. 10*
CLEVELAND,	1394 E. 39th St.,	HEnderson 5750 *Teletype CV. 153*
NEWARK, N.J.,	Foot of Bessemer St., P. O. Box 479	BIgelow 3-5920 REctor 2-6560 *Teletype NK. 74* BErgen 3-1614
PITTSBURGH,	1281 Reedsdale St., N.S.,	CEdar 7780 *Teletype PG. 475*
ST. LOUIS,	21st & Gratiot Sts.,	MAin 5235 *Teletype SL. 384*
TWIN CITY,	2545 University Ave. St. Paul, Minn.	NEstor 2821 *Teletype STP. 154*

GENERAL PURPOSE STEELS

Steel Products, Tools, Machinery and Equipment

A call to us may solve your problem. Many such calls have kept vital war production from being stopped for lack of some piece of steel—or some piece of machinery or equipment. If we have what you want, it can be yours *in a hurry*—subject, of course, to priority restrictions. If we don't have it, we'll do everything we can to help you find a source of supply. Try us—note addresses, phone and teletype numbers at right.

NATIONAL EMERGENCY ALLOY STEELS

These new steels have made it possible to meet the critical conditions imposed by the shortages of strategic alloys. They have given satisfactory results—in fact, have sometimes out-performed steels previously used.

We welcome your inquiries. We'll gladly assist you in determining the grades best suited to your needs. Phone, wire or write our nearest warehouse.

AIRPLANE STEELS

Our Chicago Warehouse has been designated by the War Production Board as a warehouse to distribute the aircraft materials listed below. They are for use in airplanes and available at our Chicago Warehouse only.

WD-X-4130 SHEETS. Open Hearth, Normalized, Pickled and Oiled to Spec. AN-QQ-S-685, Condition N. All gauges .016 to .50, sheets 18 x 72".

NE-8630 SHEETS. Open Hearth, Normalized, Pickled and Oiled to Spec. AN-S-12, Condition N.

STAINLESS STEEL BARS.....Spec. AN-QQ-S-771.

STAINLESS SHEETS .....Spec. AN-QQ-S-772. Spec. AN-QQ-S-757.

WRITE, PHONE OR WIRE, if you are eligible for these Airplane Steels, to United States Steel Supply Company, P.O. Box MM, Chicago, Ill. Telephone BRUnswick 2000 —Teletype CG. 605.

UNITED STATES STEEL SUPPLY COMPANY

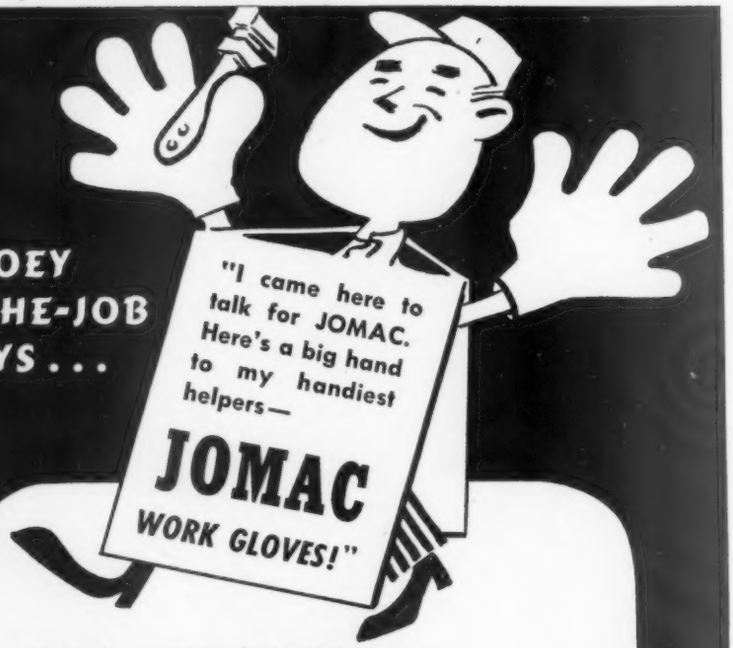
(formerly Scully Steel Products Company)

UNITED STATES STEEL SUPPLY COMPANY

USS STEELS

SERVICE

UNITED STATES STEEL



JOMAC HEAT-RESISTING, LONG-WEARING GLOVES

They are proving themselves in hundreds of shops where workers must handle metals too warm to touch. The remarkable Jomac Fabric is a loop-finished cloth with air-cell "cushions" which allow breathing-space and an easy dissipation of heat. Jomac's loop finish gives extra protection to hands, extra *long wear.*

JOMAC REGULAR INDUSTRIAL GLOVES

A modern work-glove that is semi-heat resisting and gives as much as *7 times the service* of ordinary work gloves. Jomac Fabric and its hidden lock-stitch keep the thick pile in place and provide extra strength and wear. Jomac Gloves can be washed repeatedly, *kept clean* . . . and thus minimize the dangers of dermatitis and other skin infections.

TEST THEM!

Just try JOMAC GLOVES on your stiffest jobs. Test them for heat-resistance, for wear, for washability, for economy, for *increased production.* Write for full details.

JOMAC WORK GLOVES

C. WALKER JONES CO.

6135 N. Lambert St., East Germantown, Philadelphia 38, Pa.

(Continued from page 118)

cago Show Printing Co., Chicago, Ill. Tape is said to be non-toxic, and to withstand salt spray, dust and gas contamination, to have high tensile strength, and good adhesive power. The cloth is so woven that it tears evenly at right angles to either edge.

END DUMP HOPPER

NEW model automatic end dump hopper on casters is announced by H. L. Pitcher Co., 12400 Strathmoor, Detroit, Mich. When the latch is released and the load is dumped, the bucket is so balanced that it automatically returns and latches in position when reloaded. It rides empty in the balanced position. It is designed to fit any kind of lift truck, but may be built to specifications as to capacity and yardage content.

CARBON BLACK TWO GRADES

TWO new grades of carbon black are announced by United Carbon Co., Inc., Charleston, W. Va. Kosmobile No. 77 made from natural gas by the channel process is for use in natural rubber and synthetics; has low heat build-up, fairly high resiliency, and good reinforcing properties. Kosmos 20 is semi-reinforcing type made from natural gas by the furnace process. It is easy to process, develops little heat, and is highly resilient.

ELECTRONIC BRAZING OF TOOLS

COMMERCIAL availability of electronic induction equipment for routine brazing of carbide tools using any suitable brazing medium including copper is announced by Carboloy Company, Inc., Detroit, Mich. While based on standardized units their use in each case is to be engineered to the needs of individual organizations. Among the claimed advantages

(Continued on page 122)

"Tin Fish"..

Globe Steel Tubes Help to Make This Deadly Weapon of Modern War

Less than 20 ft. long, weighing approximately a ton, the deadly giant "tin fish" torpedo can blast a $60,000,000 battleship into jumbled scrap. . . . Within its cylindrical steel walls are 5,222 parts — 1225 different assemblies — for propulsion, navigation and destruction. . . . Some parts are machined to dimensions so close that their lubrication is accomplished with a medical hypodermic needle. . . . Seamless steel tubular parts for these most complicated and deadly devices of warfare are produced at Globe Steel Tubes. . . . Globe ability to produce steel tubes of exacting characteristics is effectively helping to perfect this most complicated device of destruction.

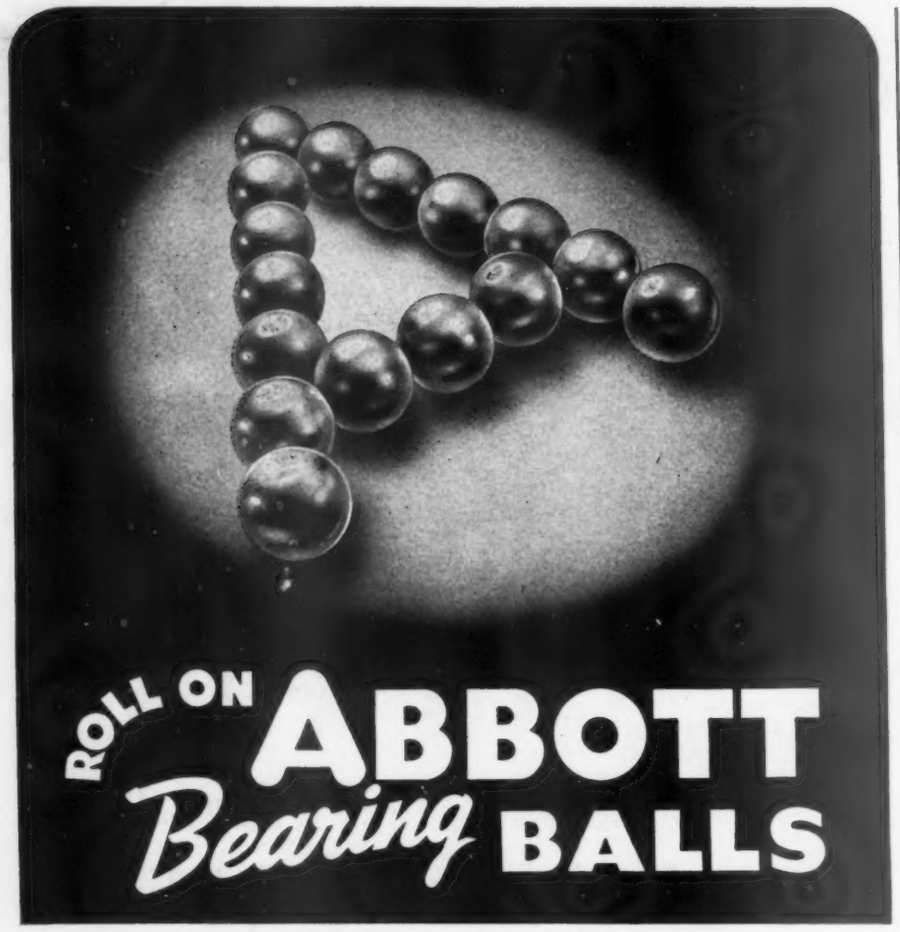
We salute the fighting courage of the torpedo plane squadrons who so skillfully drop "tin-fish" from the sky to hasten Allied Victory.

GLOBE TUBES

★ STAINLESS TUBES
★ BOILER TUBES
★ GLOBEIRON TUBING
★ GLOWELD TUBES
★ CONDENSER AND HEAT EXCHANGER TUBES
★ MECHANICAL TUBING

GLOBE STEEL Tubes

GLOBE STEEL TUBES CO., *Milwaukee, Wisconsin, U.S.A.*



EAT-UP "TOUGH JOBS"

Heavy duty assemblies don't furnish all the "tough jobs" for ABBOTT BEARING BALLS to accomplish. Many light, intricate mechanisms require ABBOTT exacting precision plus stamina.

ABBOTT BEARING BALLS for years have been successfully competing and winning against friction and, so called, tough load carrying jobs.

ABBOTT BEARING BALLS do what is expected of them. The daily applications in countless types of both light and heavy duty mechanisms prove conclusively — ABBOTT for "tough jobs".

KEEP 'EM ROLLING on ABBOTT BEARING BALLS

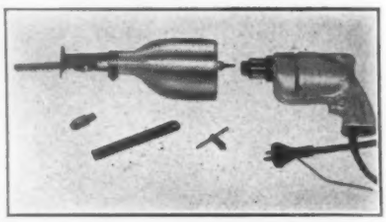
WRITE ABBOTT for the grade of ball to match your standard of precision — we will glady supply estimates of delivery.

ROLL ON ABBOTT *Bearing* BALLS
THE ABBOTT BALL COMPANY HARTFORD, CONN. U.S.A.

(Continued from page 120)

of induction brazing of carbide tools are greater convenience, greater speed, greater simplicity, accurate and automatic control, lower operating costs, more consistent brazes and greater safety.

SAW GUN ATTACHMENT



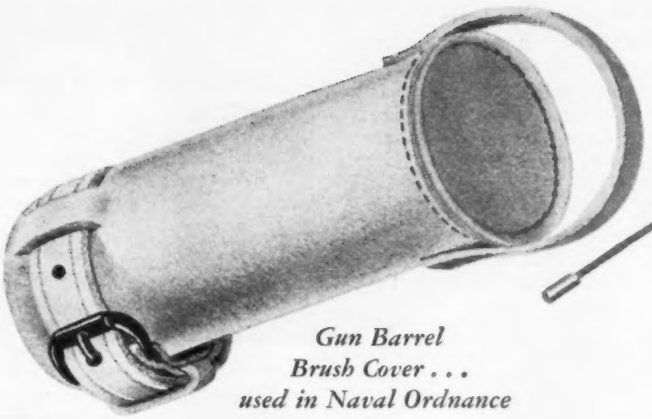
NEW saw-gun, described as an attachment for electric drill, flexible shaft or compressed airline, creating an efficient portable power saw or file, has been developed by the Mid-States Equipment Co., Dept. P, 2429 S. Michigan Ave., Chicago, Ill. Tool is said to save much time on panel notching, slotting or other fabricating operations in plastics, stainless steel, monel metal, corrugated or plain steels in heavy gauges. Will cut directly into wood or plastic without drilling for starter. It is recommended for use on drill with speed of 200 rpm or more. Also available as complete unit with heavy duty, high quality drill and chuck.

BLUE OR BLACK & WHITE PRINTS

Fast printer, known as Spee-Dee, for making blue prints or black and white prints, has been developed by Peck & Harvey 4325 Addison St., Chicago. It is said prints can be made in half a minute. Developing time for a black and white print is 10 seconds. Unit can be plugged into any standard electric outlet. Comes in two sizes, 18 x 18 and 18 x 24.

NEW FLUORESCENT LIGHTING FIXTURE NEW industrial type fluorescent lighting fixture which meets the latest critical material weight requirements of WPB, is announced by Sylvania Electric Products, Inc., Ipswich, Mass. New unit designed to operate two or three 40-watt lamps will be shortly followed by a companion unit for a pair of 100-watt fluorescent lamps. Ballast is com-

(Continued on page 124)



Gun Barrel Brush Cover . . . used in Naval Ordnance

Earphone Head-Band Cover— covers and positions spring steel band and wires

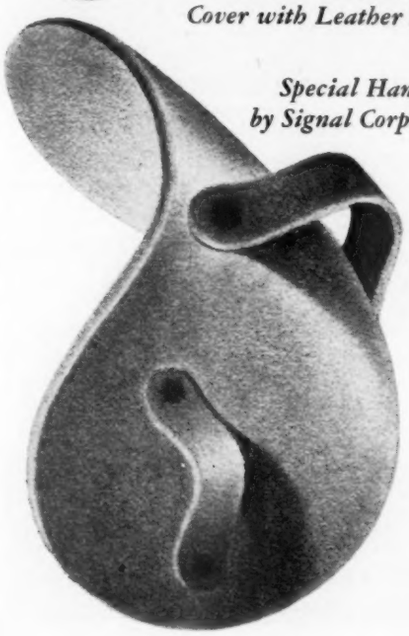
Leather can Take it!

Leather is tough and adaptable. And for thousands of mechanical applications, both standard and special, it is far superior in a variety of ways to any other material.

But leather in itself is not enough. It must be correctly tanned and conditioned . . . properly formed, moulded, hardened, lubricated or stretched . . . to best solve the specific problems of the job at hand.

It is the ability to *know how* . . . based on 65 years of specialization and research . . . that has established Chicago Rawhide products as a standard of quality and performance all over the world.

Solenoid Protecting Cover with Leather ties



Special Hand Pad used by Signal Corps in laying out or handling cable

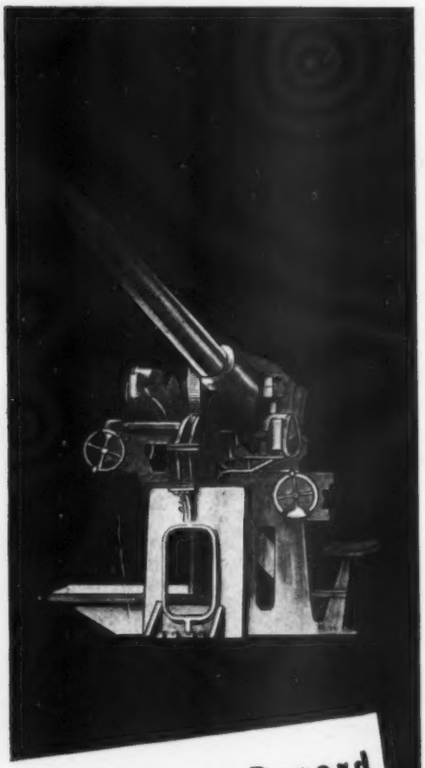
CHICAGO RAWHIDE MANUFACTURING CO.

Established 1878

Manufacturers of Leather and Synthetic Rubber Products for Mechanical Application

1301 ELSTON AVENUE • CHICAGO, ILLINOIS

DETROIT • NEW YORK • PHILADELPHIA • LOS ANGELES • PITTSBURGH
BOSTON • PEORIA • SYRACUSE • CLEVELAND • CINCINNATI



Hangs Up Record for Sawing GUN MOUNTS

Manufacturer 100% Sold on Capewell

The longest record of blade life, on a job of sawing 4140 steel gun mounts for a midwestern manufacturer, was turned in by Capewell's Technite, molybdenum high speed hack saw blades. Have you tried this rugged fast-cutting, precision blade on your tough job? Order from your mill supply man today. The Capewell Mfg. Co., Hartford, Conn.

CAPEWELL

The Trend is to TECHNITE
The Molybdenum High Speed Hack Saw Blade

(Continued from page 122)

pletely enclosed to contribute to the safety and cleanliness of the unit as a whole. Non-metallic reflector has reflecting surface of Sylvania Miracoat which makes it even more efficient than its predecessor —porcelain enamel on steel.

GENERAL PURPOSE RADIO RELAY

A GENERAL purpose radio relay, series 345, designed by Guardian Electric, 1635 W. Walnut St., Chicago, for use in aircraft, is available in contact combinations from single pole, single throw, up to three-pole double throw. This feature combined with large coil winding area makes the series 345 highly efficient in compact space. Dimensions are 2-3/8" & 2-1/32" x 1-11/16". Circular No. 345 gives details.

PROJECTS INVISIBLE LIGHT 1500 FT.

NEW photoelectric protection system which projects a fence of invisible light over distances as great as 1500 feet, and gives instant local or central-station alarm, is announced by Photoswitch, Inc., 77 Broadway, Cambridge, Mass. Receiver responds only to frequency of light emitted from the light source and is not affected by other artificial light or daylight. If invisible infrared light is not required, the operating range of the system exceeds 2000 feet.

ABRASIVE BELT GRINDER

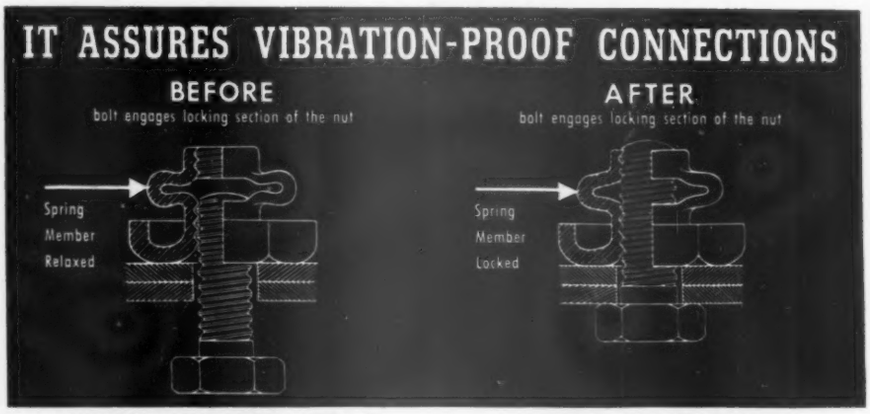
IMPROVED 6" Wet-N-Dry abrasive belt grinder has been put on the market by Hammond Machinery Builders, Inc., Kalamazoo, Mich. Unit has large cast base, large sludge pan, and pulley-motor mountings easily adjusted from outside the base. The machine can be adjusted from vertical to horizontal position while it is running. Work table can be adjusted to any desired working angle and is available as a bench or floor model.

SAFETY SIPHON FOR ACIDS

UTILIZING the safe vacuum pump principle, Speare's safety siphon is being marketed by Pulmosan Safety Equipment Corp., 176 Johnson St., Brooklyn, N. Y., for discharging acids and chemicals from carboys, drums and barrels. Unit consists of sturdy acid-resistant casing, flexible Saran Plastic siphon tube, and positive control flow valve. It has no glass parts to break, requires no bulbs or auxiliary pumping apparatus, and cannot be over-primed or over-filled. Does not build up dangerous pressures.

(Continued on page 129)

IT ASSURES VIBRATION-PROOF CONNECTIONS



ELIMINATES AXIAL PLAY

The Boots Self-Locking Nut is one piece, all-metal—withstands severest vibration. The top (locking) section is displaced in a downward direction . . . locking threads are out of lead with load carrying threads of lower section.

Upon insertion of bolt, top section of nut is extended to engage with threads of bolt. A constant force is thus established which locks nut firmly into position. Axial thread play is eliminated.

OTHER ADVANTAGES:

1. Because Boots Nuts are *all* metal, they are not affected by the corrosive action of oil, chemicals or water.
2. They have greater re-usability in maintenance than other nuts.
3. They resist high temperatures.
4. They meet the exacting specifications of all government aviation agencies in an industry where loose fastenings could not be tolerated.

There's a BOOTS NUT for every application

ROL-TOP BOOTS ANCHOR

BOOTS AIRCRAFT NUT CORPORATION
GENERAL OFFICES, NEW CANAAN, CONNECTICUT

LIGHT • S • STABLE •

PRO ER PARTS

ALL grades of Formica are light (average specific gravity 1.34) and that makes them adaptable for many uses in airplanes. Some of them are very strong; for instance, the Pregwood used for propeller blades has tensile strength of 30,000 lbs. per square inch; flexural strength 40,000; Modulus, 2,700,000; compressive 15,000 and shear 8,000 pounds per square inch. Canvas base is also used for many propeller parts.

Add to lightness and strength the fact that the material is chemically inert and free from corrosion or deterioration from contact with the atmosphere; that the co-efficient of thermal expansion is very low, as is the moisture absorption—and the value of the material for propeller parts, and air frame parts is easily appreciated. We will furnish more complete data on request.

FORMICA

THE FORMICA INSULATION CO.
4665 Spring Grove Avenue
Cincinnati, Ohio

AMERICAN *Aircraft Motors*

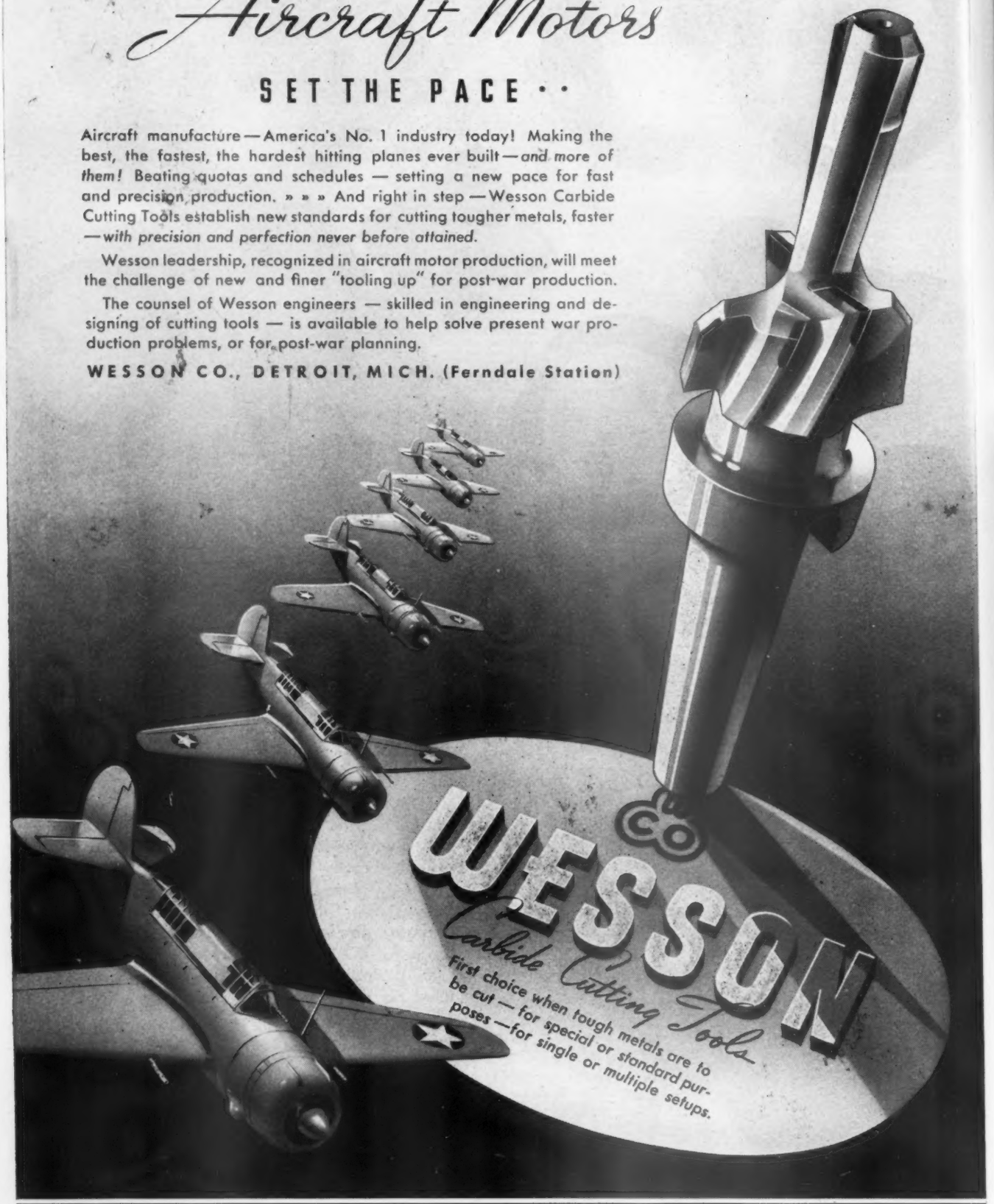
SET THE PACE ··

Aircraft manufacture — America's No. 1 industry today! Making the best, the fastest, the hardest hitting planes ever built — *and more of them!* Beating quotas and schedules — setting a new pace for fast and precision production. » » » And right in step — Wesson Carbide Cutting Tools establish new standards for cutting tougher metals, faster — *with precision and perfection never before attained.*

Wesson leadership, recognized in aircraft motor production, will meet the challenge of new and finer "tooling up" for post-war production.

The counsel of Wesson engineers — skilled in engineering and designing of cutting tools — is available to help solve present war production problems, or for post-war planning.

WESSON CO., DETROIT, MICH. (Ferndale Station)


WESSON
Carbide Cutting Tools
First choice when tough metals are to be cut — for special or standard purposes — for single or multiple setups.

WHEN IT'S OVER "Over There" we'll all have a higher standard of living "over here." Better vacuum cleaners, refrigerators and washing machines—better cars, trucks, planes, bicycles — better tractors, plows and other farm machinery. Industrial plants will have better tools and better machines.

They will all serve better, last longer, cost less and be safer. One important reason is that Wesson Carbide Cutting Tools will enable the manufacturers of all these products to use more durable, tougher metals — insure greater precision and perfection — and at the same time cut costs by saving production time.

IT HAD TO COME...

...this better Calibration Plate

Modern developments in welding electrodes have imposed new and more complex problems upon users. Now, with the many new variations in electrode coatings, accurate results require that you know what your WSR ratings are so that you can select exactly the right heat across the arc for each electrode.

To help you weld more efficiently . . . to take full advantage of present and future advancements in electrodes . . . P&H has developed the new "Visi-matic" Calibration Plate. Simple, easy to read, it eliminates guesswork by permitting you to select the *exact* heat required for each size and type of electrode.

As with other P&H advancements, the one thought behind the new "Visi-matic" Calibration Plate is to help you make *better welds, more easily, at lower cost.*

See Next Page ☛

WELDING AMPERES
HIGH
MEDIUM
LOW
60 80 100 125 150 200 250 300 350 400 450
DIRECTION OF ROTATION
INSTRUCTIONS FOR OUTPUT SETTING
GREEN BAND
USE FOR MEDIUM VOLTAGE ELECTRODE-GRADE E-6010
ARC VOLTAGE RANGE 22-32 VOLTS
YELLOW BAND
USE FOR LOW VOLTAGE ELECTRODE - GRADE E-6012
ARC VOLTAGE RANGE 20-25 VOLTS
CONSULT YOUR ELECTRODE SUPPLIER FOR
PROPER ARC VOLTAGE AND WELDING CURRENT
HARNISCHFEGER CORP. MILWAUKEE, WIS., U.S.A.

NOW
ACCURATE HEAT CONTROL
is a simple matter

The new P&H "Visi-matic" Calibration Plate provides three color bands, corresponding to the three electrode groups for low, medium, or high voltage requirements.

Settings Provide For Varying Heat Requirements

Calibrated in amperes, the new "Visi-matic" Plate is used with any make of electrode. Not only does it enable you to compensate for variations in voltage with the amount of current or amperes, but also for the variations in coatings as illustrated by the typical electrodes below:

Down Hand
—Coatings burn off at a much slower rate than metal and therefore require higher voltages to insure ample heat across the wider arc gap.

All Position
—Coatings burn down more slowly than metal but the difference is not so great as in Down Hand.

Poor it
—Metal and coatings burn at approximately the same rate of speed. Amperage requirements are the lowest of the three groups.

By merely setting the stylus at the dot opposite the desired amperage, you are sure of the correct heat across the arc *on every job.*

WSR (*Welding Service Range*) Ratings

All P&H Arc Welders are rated on WSR which is actual delivered output. You know exactly how much heat your machine will deliver from minimum to maximum.

Single Current Control

With P&H's single control, you have but one simple adjustment to obtain *any* welding heat within the machine's range. Arc response is automatic on all classes of work—with all types of electrodes.

P&H's outstanding advantages are: (1) Known Welding Service Range; (2) "Visi-matic" Calibration; and (3) Automatic Arc Response—all of which are accomplished with (4) Single Control for Welding Heat. Literature will be sent on request.

P&H ARC WELDERS

The complete line of P&H Arc Welders includes both A.C. and D.C. types in a wide range of capacities. All machines are rated on WSR (Welding Service Range). P&H also manufactures a complete line of welding electrodes.

HARNISCHFEGER CORPORATION

ARC WELDERS · EXCAVATORS · ELECTRIC CRANES · P&H · MOTORS · HOISTS · WELDING ELECTRODES

GENERAL OFFICES: MILWAUKEE, WISCONSIN

Canadian Distribution: The Canadian Fairbanks-Morse Co., Ltd.

ALUMINUM RIVETS SMALL LOTS SOURCES

To provide for the needs of consumers who require aluminum rivets in amounts smaller than the minimum mill runs, the Aluminum and Magnesium Division, War Production Board, has arranged to have stocks of these items carried in the following warehouses:

Whitehead Metal Products Company of New York, Inc., 303 West Tenth Street, New York City; Steel Sales Corporation, 3343 South Pulaski Road, Chicago; Metal Goods Corporation, 3259 Brown Avenue, St. Louis, Missouri; J. M. Tull Metal & Supply Company, 265 Marietta Street, N. W., Atlanta, Georgia; and Pacific Metals Company, Ltd., 3100 19th Street, San Francisco.

The stock will include the following AN rivets in A17ST and 17ST alloy, all alumilited: 425, 426, 430, 442, 455 and 456. The diameters will be 1/16-inch, 3/32-inch, 1/8-inch, 5/32-inch, 3/16-inch and 1/4-inch. Lengths will be a full range in 1/16-inch increments. The rivets will be carried in one-pound boxes and can be secured by applying the CMP allotment number to the order.

"E" AWARD BRINGS WARNING AGAINST LET-DOWN IN PRODUCTION

A warning not to let the recent victories in the Mediterranean result in a let-down in production was sounded by Lt. Commander J. Douglas Gessford, U. S. N. R., at ceremonies marking the award of the Army-Navy "E" pennant and but-

President Driver of Driver Harris Co., pins "E" button on Chief Needahbeh, foreman of the company's salvage division.

tons to the Driver-Harris Co., Harrison, N. J. and its employees. "Don't let yourself be fooled", he said, "for reverses can come and change the good news overnight. You have got to work harder today to kill in order to exist than you ever did before in your life. You haven't time for anything but production—production that is in direct competition with the plants in Japan, Germany and Italy". The pennant was accepted by Frank L. Driver, president of the firm.

Wickwire Spencer Steel Co., has received its first gold star for its Palmer, Mass. wire rope plant from the United States Maritime Commission. The plant and its employees received the Maritime "M" and badges last October.

The A. F. Holden Co., New Haven,

(Continued on page 130)

10-Day Sleeving Job Done in 24 Hours!

METCO Metallizing Gun, brought to the job, avoids dismantling of heavy equipment

ONLY THE METCO Type 2E Metallizing Gun is equipped with the Power Control Governor. Built into the turbine, it automatically controls and stabilizes wire feed at *all* speeds . . . eliminates gear changes . . . avoids obsolete needle valve control which restricts air flow and reduces power at low speeds. For maximum efficiency and economy, insist on the Power Control Governor. Write for Bulletin 42A.

TEN YEARS OF PROGRESS

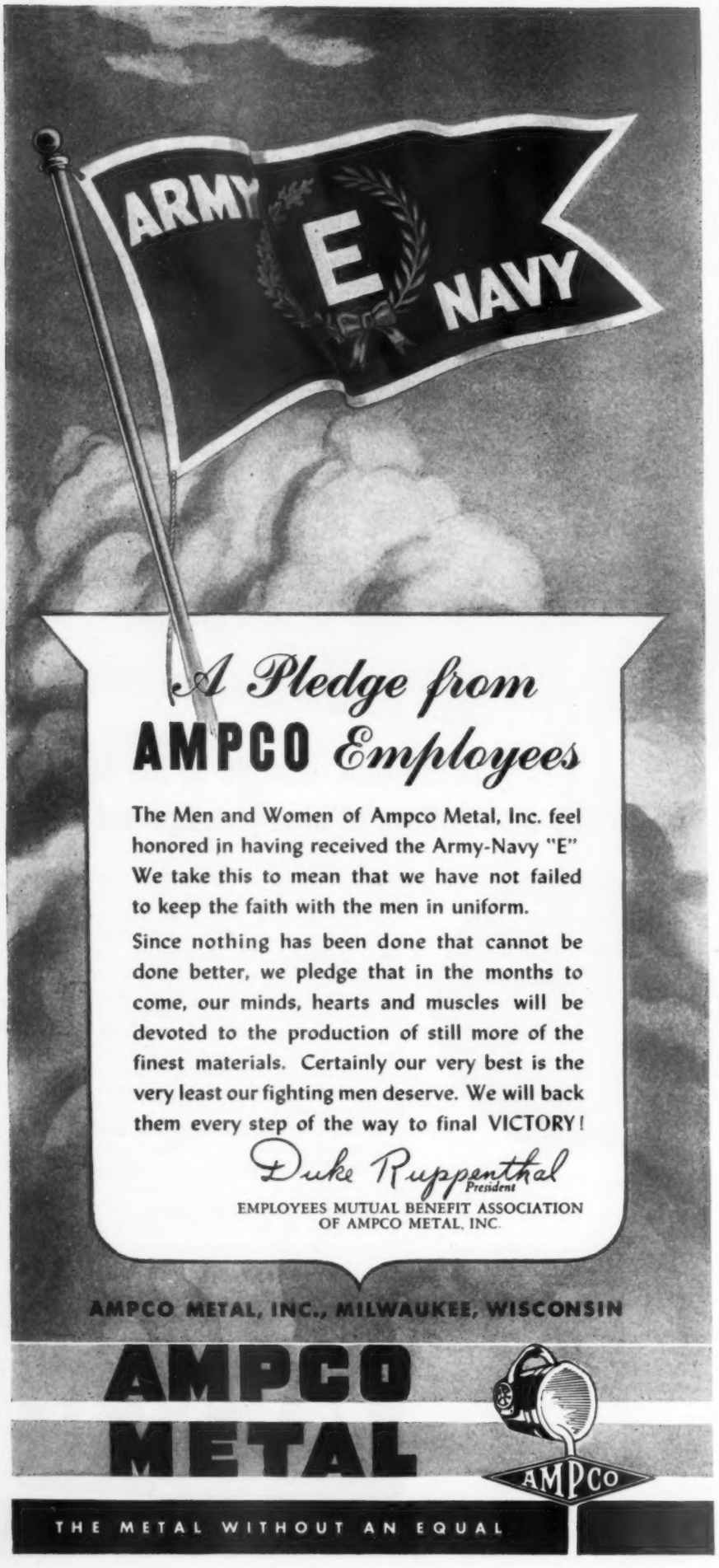
WHEN SLEEVES on your shafts and plungers wear, do you tie up equipment for weeks or days replacing them? A METCO Metallizing Gun can do the same job better *in only a fraction of the time!* Resleeving the shaft on a water pump in one power plant used to take 10 days by the time the pump was almost completely dis-assembled, old sleeves chiseled off, new ones pressed on, and the equipment re-assembled. Now, only the upper housing is removed, *a METCO Gun is brought right to the job,* any desired metal is sprayed on the old sleeves, and the pump is ready for service in 24 hours!

With a METCO Metallizing Gun in your maintenance department, or on your production line, you can build up worn or mis-machined surfaces of any type and size. Operators can be trained within a few days. Write METCO for full details now, and ask for the latest issue of METCO NEWS —industry's magazine of conservation.

METALLIZING ENGINEERING COMPANY, INC.
38-18 30th Street Long Island City, N.Y.
In Canada: B. W. Deane & Co., Ltd., Montreal

METCO
REG. U. S. PAT. OFF.

WORLD'S FINEST METALLIZING EQUIPMENT


ARMY
E
NAVY
A Pledge from
AMPCO Employees
The Men and Women of Ampco Metal, Inc. feel honored in having received the Army-Navy "E" We take this to mean that we have not failed to keep the faith with the men in uniform.
Since nothing has been done that cannot be done better, we pledge that in the months to come, our minds, hearts and muscles will be devoted to the production of still more of the finest materials. Certainly our very best is the very least our fighting men deserve. We will back them every step of the way to final VICTORY!
Duke Ruppenthal
President
EMPLOYEES MUTUAL BENEFIT ASSOCIATION
OF AMPCO METAL, INC.
AMPCO METAL, INC., MILWAUKEE, WISCONSIN
AMPCO
METAL
AMPCO
THE METAL WITHOUT AN EQUAL

(Continued from page 129)

Conn., has been awarded the Army-Navy "E" pennant, presentation of the flag being made by Major B. W. Chutter representing the U. S. Army. Lieut. A. K. Burt representing the Navy, presented token "E" pins to David C. Carney, Pfc., who was wounded at Guadalcanal, who in turn presented the pins to representatives of the employees of the New Haven and West Haven plants.

Container Corporation of America. The Army-Navy "E" award has been presented to the employees of the Philadelphia plant of the Container Corporation of America. Colonel Maurice C. Gregory, QM Philadelphia Marine Corps Depot of Supplies, presented the pennant to President Walter P. Paepcke, and Col. D. N. Hauseman, chief of the Philadelphia Ordnance District gave the lapel insignia to representatives of labor unions operating at the plant. A martial touch was added to the ceremonies by the appearance of a color guard and bugler of the Marine Corps, and the presence of a group of high ranking officers of the Army, Navy and Marine Corps.

Walter P. Paepcke, President Container Corp. of America Addresses Employees at Philadelphia Plant at A-N "E" Award Ceremonies

Stewart-Warner Corp., Chicago, has for the second time won the Army-Navy Production award, and thereby is permitted to add "The White Star" to the "E" pennant which it received last September.

Republic Drill & Tool Co., Chicago, has received the Army-Navy Production award, and apropos thereof statement is made that this is "the first award made to an organization designed primarily for and operated by women."

Alloy Steel Products Co. Inc., Linden, N. J. has been awarded the Army-Navy "E" presentation being made at the company's plant on June 17.

I. F. Laucks, Inc., Seattle, Wash. is now flying the Army-Navy "E" flag from its Seattle Plant No. 1. The presentation was made at appropriate ceremonies to Vice President H. P. Banks by Commander R. C. Risley, Assistant Chief of Staff, 13th Naval District.

Ampco Metal, Inc., Milwaukee, Wis., announce the presentation of the Army-

(Continued on page 136)

A BIRTHDAY STATEMENT ABOUT "MX" WHEELS

THE announcement of "MX" Wheels in 1942 introduced a new abrasive tool to industry.

These wheels were created by Carborundum to perform a specific function—the removal of "disturbed metal" such as burrs and tool marks, resulting from grinding, machining, boring and similar operations. Research and field tests showed "MX" Wheels could do this job better than ordinary finishing methods. A year's experience has confirmed their advantages.

"MX" Wheels, fabricated from cotton fibre intermingled with abrasive grains are unlike any other abrasive product. They have unique characteristics.

Because of their "cushioning" effect "MX" Wheels literally hug the work. Chatter and vibrations are reduced, smooth finishes assured.

"MX" Wheels are best suited for breaking corners, removing burrs and polishing grooves or slots. For burr removal on jobs where surrounding surfaces must be kept free of abrasive marks . . . or for polishing which must be done with light stock removal to maintain tolerance limitations . . . they are ideal.

A request addressed to us, Dept. P, at Niagara Falls, will bring you literature further describing the wheel and illustrating a few of its many uses.

CARBORUNDUM
REG. U. S. PAT. OFF.
ABRASIVE PRODUCTS

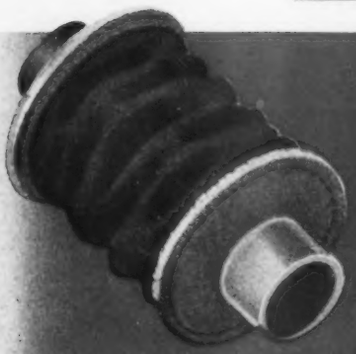
THE CARBORUNDUM COMPANY, NIAGARA FALLS, N. Y.

MANUFACTURERS OF GRINDING WHEELS, COATED ABRASIVES, SUPER REFRACTORIES, HEATING ELEMENTS

Sales Offices and Warehouses in New York, Chicago, Philadelphia, Detroit, Cleveland, Boston, Pittsburgh, Cincinnati, Grand Rapids

(Carborundum and Aloxite are registered trade-marks of and indicate manufacture by The Carborundum Company)

Protection Plus—



Governor Spring Boot —with internal compression spring used on rod governing tractor speed.

Interesting Chicago Rawhide Products

Injector Coupling Boot —with garter springs which clamp it into position around the coupling it protects.

Leather Boot to seal out fumes and dirt from interior of wing section when landing flaps are down.

Transmission Shift Rod Dust Boot—fits by compression of spring against two flat surfaces.

It is well known that machines and equipment, even though correctly designed, often break down and cause costly delays, because certain moving parts lack adequate protection against dust, dirt, grit and water.

The answer to this, of course, is to use the most efficient possible boot or dust cover . . . engineered to meet the exact service conditions and requirements of each specific job. To do this, the selection of the right leather and tannage, plus proper processing and moulding, are just as important as the design.

That's where our 65 years' experience comes in . . . and why Chicago Rawhide Products are noted for long, trouble-free, economical service.

CHICAGO RAWHIDE MANUFACTURING CO.

Established 1878

Manufacturers of Leather and Synthetic Rubber Products for Mechanical Application

1301 ELSTON AVENUE
CHICAGO, ILLINOIS

DETROIT • NEW YORK • BOSTON • SYRACUSE
PHILADELPHIA • LOS ANGELES • PITTSBURGH
PEORIA • CLEVELAND • CINCINNATI

WHEN SIMPLIFICATION KNOCKED OUT HALF OF THE LINE

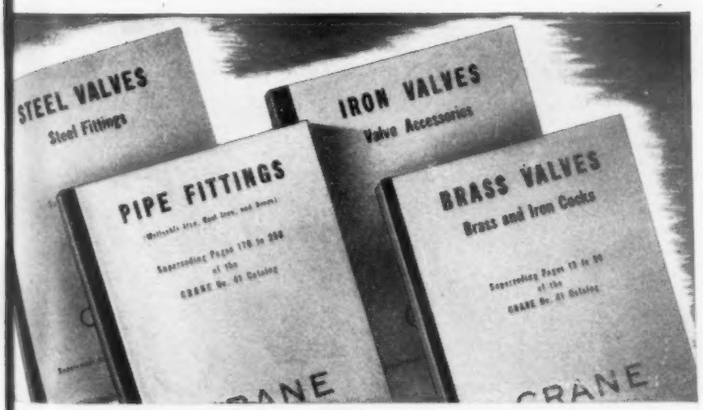
SIMPLIFICATION of lines—whether bicycles or valves—is a part of the wartime program to conserve vital materials. Manufacturers who have simplified their lines are able either to produce necessary minimum output with less raw material or to increase production of those items which are vitally needed to win the war. At Crane for example, reducing by more than half the variety of valves and fittings in the line has enabled the great Chicago Works to double and redouble its output of material for the Navy, the Merchant Marine and essential industry.

But product simplification frequently means inconveniences to users. Manufacturers' catalogs are made obsolete. They are no longer reliable sources of information.

Recognizing this condition Crane Co. is introducing a cataloging innovation in the valve and fitting industry. Individual catalog sections are issued as each class of product is brought under the Simplification program. Pages from the latest catalog are reproduced with markings to show instantly what products have been eliminated and what are available. Noteworthy is the fact that the Crane line is still the most complete in the industry.

But this improved cataloging is only one phase of Crane service. Through branches and wholesalers Crane offers the services of experienced men to aid you with any valve or piping problems. And to plant managers, Crane offers Piping Pointers Bulletins, a service to aid in securing the greatest possible satisfaction from pipe lines.

CRANE CO., 836 So. Michigan Ave., Chicago, Illinois

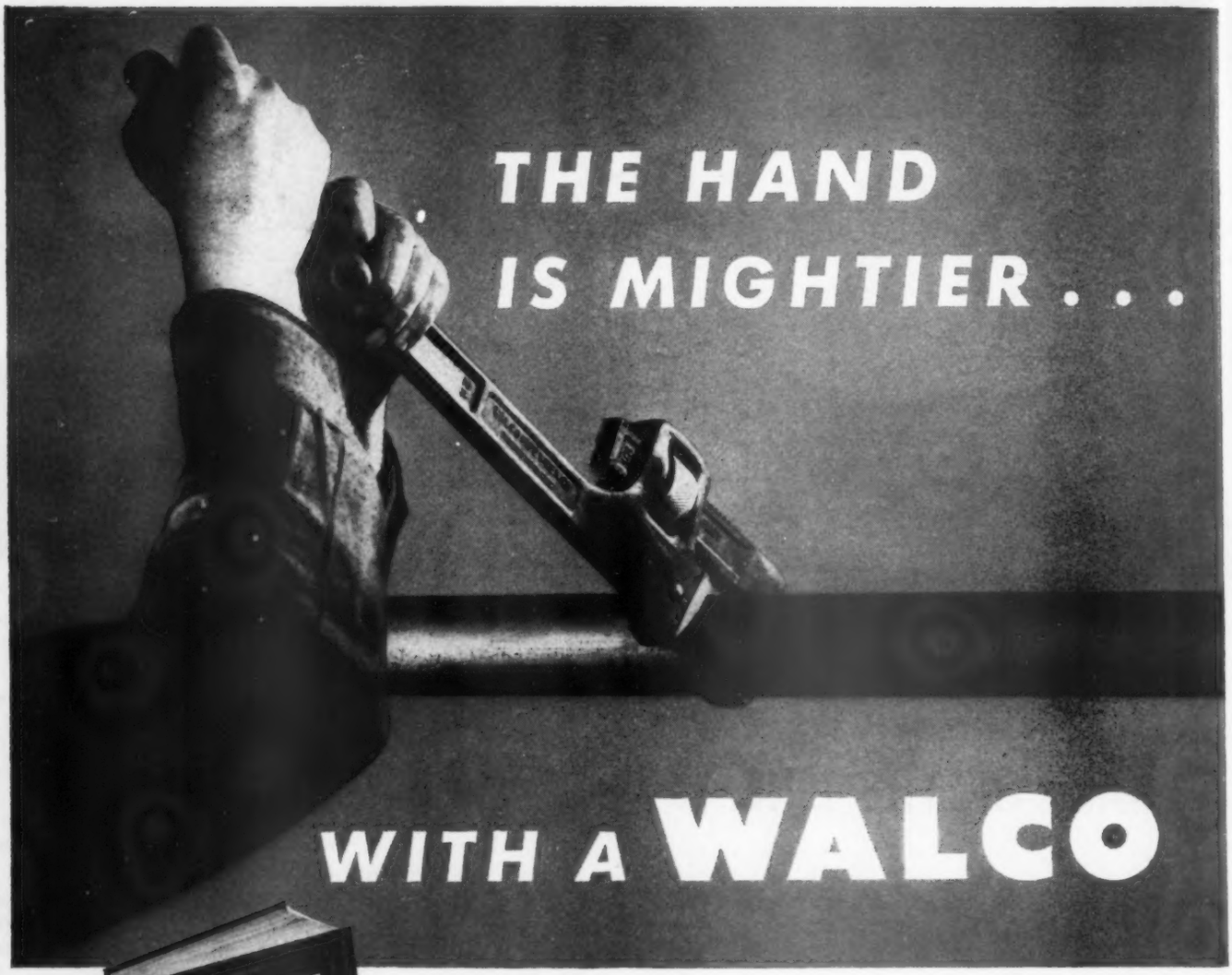


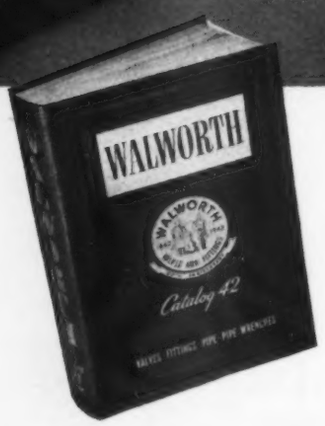
For years the Crane Catalog has been recognized as a real piping handbook. Under wartime simplification the Crane catalog service becomes even more valuable. The new individual catalogs whose pages are exact reproductions from those of the large general catalog are designed to show at a glance products still obtainable. As seen in the major illustration above a system of shading, or crossing out indicates which products have been eliminated, providing a quick reference for convenience in writing specifications.

With valves so vital to victory, it is important that pipe lines be kept at full operating efficiency—that every valve give its full measure of service. To assist plant managers in training new maintenance men—to aid old timers with short cuts on valve repair—Crane has issued a series of Piping Pointers Bulletins. They contain simple, practical information on valve selection and valve maintenance. Copies will be supplied to any manufacturing plant faced with piping problems.

ARMY E NAVY

CRANE VALVES





You'll find pertinent information on Walworth's complete line of valves, fittings, pipe, and pipe wrenches in the new Walworth Catalog 42. Included are 78 pages of practical engineering data that simplify valve selection and make piping layouts easier. Write, on business stationery, for your free copy. Address: Walworth Company, 60 East 42nd Street, New York, N. Y., Department 711.

Every part of a Walco wrench is designed and built for strength and safety of operation. The Walco grips and holds no matter how hard you pull. All parts of this modern wrench are **made entirely of steel.** The handle and both jaws are made of drop forged steel. The housing and handle are forged from a single piece of steel. Both jaws are carefully machined, and all parts are heat treated to provide toughness, uniformity, and strength. The cross locked lower insert jaw, which is an exclusive Walco feature, makes it easy to remove a worn lower jaw and insert a new one. The spring may be quickly and easily replaced without the use of tools. These features prolong the life of the wrench indefinitely.

Users everywhere testify to the fact that Walco is the world's strongest wrench, the safest, and by far the least expensive to use. It is made by Walworth Company, manufacturers of valves and fittings for more than a century.

ARMY E ARMY E NAVY

BOSTON WORKS
KEWANEE WORKS

WALWORTH
valves AND fittings

WALWORTH ★ VALVES AND FITTINGS ★ ESTABLISHED 1842

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

THE OLD AND THE NEW TEAM UP TO Speed Drilling!

Thor "ARMORED IN PLASTIC" 1/4" PORTABLE ELECTRIC DRILL

U14K weighs only 3-1/4 pounds, measures only 8-3/16 inches overall. Speeds: 2500, 3750, and 5000 RPM.

With its unique plastic construction, this Thor U14K 1/4-inch portable electric drill is as *new* as tomorrow. Its features of lighter weight, more power per pound and new handling ease provide performance that meets the stiff demands of today's high speed, heavy duty production! And, beneath the plastic armor is the time-proven reliability of Thor construction: the Thor Hevi-Duty motor with its great reserve of power, high torque and remarkable stamina. For every kind of heavy duty, 1/4-inch drilling, this teaming up of the old and the new gives unparalleled results. The Thor "Armored in Plastic" drill is available now to war industries. Write for circular giving full details.

Thor *Portable Pneumatic and Electric Tools*

INDEPENDENT PNEUMATIC TOOL COMPANY

600 W. JACKSON BOULEVARD, CHICAGO, ILL.
Branches in Principal Cities

Why Manganese Steel Gears are *Heavy Industry's Best Buy*

Gears and pinions in heavy power transmission work are usually subjected to severe shock loads along with exposure to gritty particles that cause rapid wear in ordinary ferrous metals. The successful performance of various kinds of equipment depends, to a large extent, on the ability of the gears and pinions to stand up under heavy loads and to resist the wearing action of abrasive materials. There are several reasons why manganese steel gears and pinions are most economical for this service.

1st—They will withstand, without breakage, shock stresses that would cause gears made of other materials to fail.

2nd—Manganese steel gears will resist the wearing action of gritty materials.

3rd—The strength of manganese steel is not necessarily associated with bulk. In many cases, castings may be lightened by coring, and still exceed in stamina heavier parts of common steel or iron.

Why Manganese Steel Gears Will Stand Shock Loads

In substance, all metals are composed of many minute particles or grains. Their resistance to breakage is dependent upon the ability of these particles to adhere to one another. If you were to examine the structure of manganese steel, you would find a metal of great density, where the particles are more closely combined than in ordinary steel. The grains are so tightly held together that great shocks and stresses can be sustained without pulling apart or fracturing the structure.

Why Manganese Steel Gears Will Resist Wear

Under abrasive or frictional wear, the teeth of manganese steel gears and pinions assume a high polish, reducing friction. Because of its dense structure, manganese steel is able to retain this smooth surface at the points of contact, and the abrasive process is retarded rather than accelerated as it goes on.

This polished surface of manganese steel acts like a good lubricant in overcoming wear. Sharp dust, grit, and other abrasive materials find it hard to get a footing on the slippery surface of this close-grained metal. Where oil and grease would only form means of attachment for the grinding particles in the surrounding air, manganese steel gears and pinions run smoothly without a lubricant of any kind. This inherent self-lubricating quality adds to the value of austenitic manganese steel as an abrasive resistant metal.

R-830 — Girth gear, 117 tooth, 74.484" p.d., 5" face, 1025 lbs., soft steel inserts cast in for customer to drill holes. Gear was cast in one piece and split afterwards for ease of assembly. It is a drive gear for rotary dryer handling raw materials for abrasive wheel manufacture.

Our picture is typical of many types and sizes of gears we have been making for thirty years for the heavy-duty equipment of America's manufacturing industries.

Amsco
AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Illinois
FOUNDRIES AT CHICAGO HEIGHTS, ILL.; NEW CASTLE, DEL.; DENVER, COLO.; OAKLAND, CALIF.; LOS ANGELES, CALIF.; ST. LOUIS, MO.
OFFICES IN PRINCIPAL CITIES

AMERICAN Brake Shoe COMPANY

(Continued from page 130)

Navy production award to its employees.

Climax Engineering Co., Clinton, Iowa, and its employees have been presented with the Army-Navy "E" award, the first, it is said, to have been made in Clinton.

The United Welding Co., Middletown, Ohio, and its employees, have been presented with the Army-Navy "E" award.

The Hughes-Keenan Co., Mansfield, Ohio, and its employees have been honored with the Army-Navy "E", first of such awards in Mansfield it is reported.

Plomb Tool Company, Los Angeles, Calif., has been awarded the Army-Navy "E", and its employees were presented with lapel pins. For the honor of receiving the first lapel pin, forge operator Anthony Jacobi was selected for the outstanding reason that he has a record for non-absenteeism of nearly 22 years of perfect attendance.

Wm. Powell Company, Cincinnati, Ohio and its employees have been awarded the Army-Navy "E" pennant and lapel pins.

The Goodyear Aircraft Corporation's plant at Litchfield Park, Arizona, is a recipient of the Army-Navy "E" award. This is the fourth Goodyear plant to receive the joint production award.

Harrison Works, RCA Victor Division of Radio Corporation of America has for the second time received the Army-Navy Production award.

Firth-Sterling Steel Co., McKeesport, Pa., and its employees were presented with the A-N "E" pennant and pins at recent ceremonies.

Hammond Brass Works, Hammond, Ind., and its employees are listed among the recipients of the coveted "E" production merit award.

The B. F. Goodrich Company has been awarded a silver merit medal by the War Production Board in the Los Angeles Calif. area "for leadership in the development of the synthetic rubber industry and particularly for the worthwhile efforts in the application of synthetic rubber in the war effort".

SIMPLIFIED SYSTEM FOR IDENTIFYING WPB FORMS

A simplified system of identifying War Production Board forms is being put into effect as present stocks are exhausted and reprinting becomes necessary, according to officials of the War Production Board.

All forms in the WPB, PD, UF and RD series and many in the CMP series which must be filled out and returned to WPB by manufacturers and others will eventually bear only the initials WPB, followed by new serial numbers.

Letters of instruction will be identified by the designation WPBI and assigned serial numbers.

All authorization, allocation and other form stationery used by industry divisions and field offices will carry the prefix GA (General Administrative), provided it

(Continued on page 138)

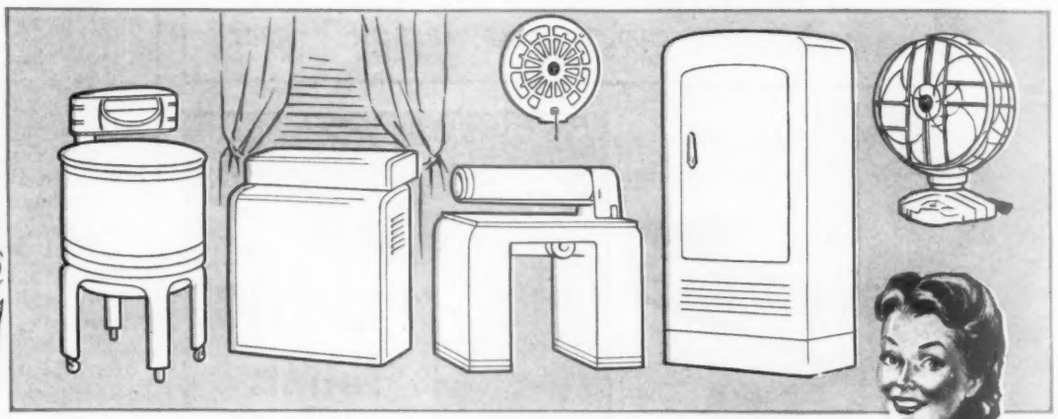
This Sewing Machine Motor Started Something!

AN historic event—at the turn of the century—was the development of an Emerson-Electric Motor for attachment to the foot-power sewing machine, then in use.

This simple motor application marked the beginning of an era in which an entire industry was founded, bringing a multitude of labor-saving, motor-driven appliances and comfort conveniences for the home.

Throughout this long period, Emerson-Electric Motors have played a major role in powering these appliances. They have lifted the yoke of household drudgery and created the opportunity for American Womanhood to achieve a fuller life.

THE ELECTRIC MOTOR ENTERS THE HOME!
Sewing Machine reproduced from Emerson-Electric advertising of 1899



TYPES OF HOME APPLIANCES POWERED BY EMERSON-ELECTRIC MOTORS

In recognition of their "patriotism and great work", Emerson-Electric workers were presented with the Army-Navy "E" Award.

When war came, the entire resources of Emerson-Electric's 53 years' experience were quickly converted and tremendously expanded for manufacturing vital implements of war—power-operated revolving gun turrets, shell parts, and many new types of electric motors for aircraft.

Out of the urgencies of war will come entirely new conceptions of electric motor design, construction and efficiency. "After Victory", manufacturers of the new and improved motor-driven appliances and equipment will confidently power their products with these motors.

THE EMERSON ELECTRIC MANUFACTURING COMPANY
SAINT LOUIS • *Branches:* New York • Detroit • Chicago • Los Angeles • Davenport

"Until the war, I never fully appreciated the importance of the electric motors on my home appliances."

EMERSON ELECTRIC

MOTORS • FANS • APPLIANCES • A. C. ARC WELDERS

Service Givers!

. . . Whether it be to fill normal Industrial and Construction needs, or the special requirements of Industrial Mobilization the only lasting basis for the popularity of any REVERSIBLE RATCHET WRENCH is the quality and quantity of the work it is capable of doing.

We are merely re-asserting what hundreds of your customers know when we say that LOWELL REVERSIBLE RATCHET WRENCHES are unequalled for quality and service.

LOWELL

LOWELL WRENCH CO. WORCESTER, MASS.

1869 THE OLD RELIABLE WRENCH 1943

NO DELAYS

PLASTIC PATCH

Takes Traffic Immediately . . .

No traffic interruptions when you patch broken concrete with durable INSTANT-USE. Material comes ready mixed. Simply shovel into hole, tamp and run traffic over immediately — without waiting. Bonds tight to old concrete. Makes smooth, solid, lasting patch. Withstands extreme loads. Keep a drum on hand for emergencies. Immediate shipment.

Request Descriptive Folder

. . . and Details of FREE TRIAL OFFER

INSTANT-USE

FLEXROCK CO. 2319 Manning St., Phila., Pa.

PLASTIC NAME PLATES

DIAL-FACES
CHARTS, SCALES
CALCULATORS
Patent Notices
Instruction Plates
Markers, etc., etc.

LAMINATED for Permanence

SAMPLES AND ESTIMATES CHEERFULLY SUPPLIED

Dept. NP

HOPP PRESS
INCORPORATED
460 W. 34th Street
New York, N.Y.

(Continued from page 136)

does not seek information from industry.

Letters and booklets of general information not having to do with the administration of any particular order or regulation will continue to be identified by the initials INFL.

Each form, as it is renumbered, will carry both old and new designations until users become familiar with the new identification.

Excepted from change CMP and CMPL forms, which will continue to be identified as formerly. These forms are used by claimant agencies and could not, therefore, correctly be included under one of the WPB designations.

It is expected that several months will elapse before all forms will bear the new numbers. In the meantime, however, "Priorities", the monthly index of WPB orders and forms, will list under their old designations all existing forms until reprinted or reissued with the new numbers. In listing the renumbered forms the previous identification also will be shown. A conversion table showing more than 600 new numbers already assigned to old forms will appear in the June issue, available June 7. "Priorities" is available at $2.00 per year from Superintendent of Documents, United States Government Printing Office.

96% OF VIOLATION DECISIONS FAVORABLE TO OPA

More than 96 per cent of the decisions rendered in price and rationing violation cases in the nation's courts during the first four months of 1943 were favorable to the Office of Price Administration, a survey by OPA discloses.

The courts, in the four months ended April 30, handed down decisions in 1,495 civil and criminal cases involving 1,676 defendants, OPO said.

Of the total, 1,437 cases involving 1,613 defendants were decided in favor of OPA. Only 58 cases involving 63 defendants, or less than 4 per cent of the total, were dismissed.

EASE RESTRICTIONS ON MECHANICS HAND TOOLS

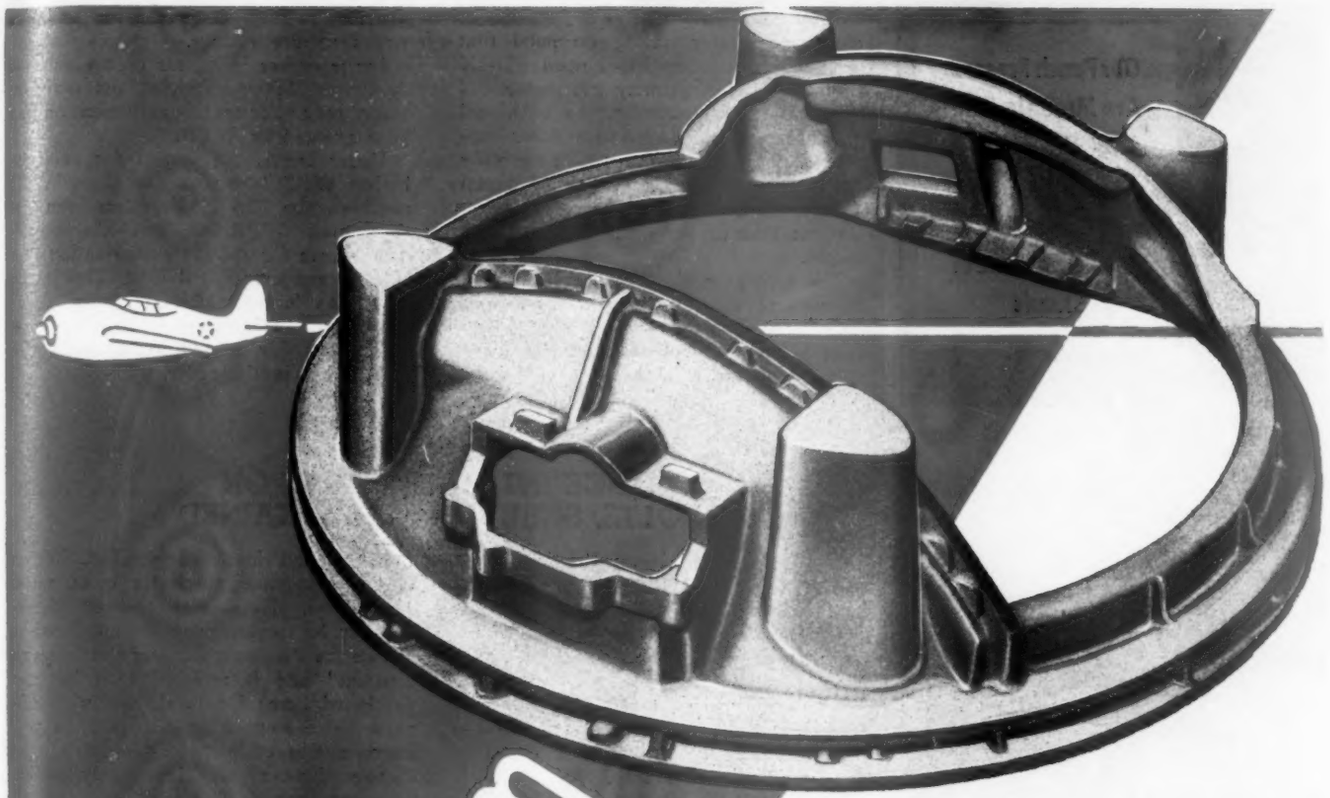
Wrenches, pliers, screwdrivers and other mechanics' hand service tools should be more generally available to farmers, home mechanics and other ultimate consumers as a result of an amendment of Order E-6 by the War Production Board.

The amended order is designed to bring about a better distribution of these tools among consumers and prime procurement programs and to provide for the orderly placement of large contracts within the capacity of the industry and the individual companies.

The order now sets aside from 20 per cent to 25 per cent of the monthly production of specified tools for commercial distributors. According to WPB officials, it will relieve developing tool shortages both in large cities and farm areas.

The 20 per cent to 25 per cent allocation to distributors is contingent upon

(Continued on page 140)



Aluminum Castings

Giant Aluminum Castings for War Machines

"It can't be done" is never the answer when cast parts, hitherto considered impossible, are brought to Howard Foundry.

Our aluminum division is producing aircraft castings up to seven feet in diameter. Too, we have made aluminum castings up to twelve feet long for other armaments — part of our current output of aluminum cast parts for tanks, ships, planes, and ordnance.

At our magnesium and bronze plants, castings for the war effort constitute our entire production. Together, these three great foundries are pouring an unheard of tonnage to shorten the war.

For armament today—for utility tomorrow.

HOWARD FOUNDRY COMPANY

4900 Bloomingdale Road Chicago

FOR VICTORY BUY UNITED STATES WAR BONDS AND STAMPS

ARMY E NAVY

Awarded and reawarded for proficiency in the production of ordnance materiel.

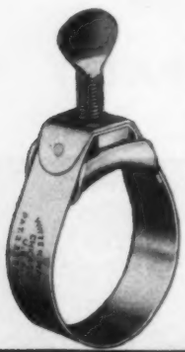
HOWARD

ALUMINUM · BRASS · BRONZE · MAGNESIUM

CASTINGS

Manufacturers of metal stampings facing problems in the feeding of coiled strip stock to punch presses will find that Wittek Automatic Roll Feeds and Reel Stands conserve man-hours and achieve new high production levels.

Providing an improved and simplified method of punch press operation, Wittek Automatic Roll Feeds and Reel Stands insure rapid, safe and accurate feeding under all conditions. Made in four different types to meet all automatic feeding requirements. Write for complete details. Wittek Manufacturing Co., 4305-15 West 24th Place, Chicago, Ill.



Wittek Hose Clamps for over twenty years identified with the Automotive and Aviation industries, are noted for their permanent leakproof hose connections. For original equipment and replacement.

ARMY E NAVY

WITTEK MANUFACTURING CO.
4305-15 W. 24th Pl., Chicago

(Continued from page 138)

the manufacturer having on hand that proportion of orders based upon PD-1X applications for priority assistance. If the proportion is smaller, the additional production will be delivered to other buyers, predominantly military. On the other hand, distributors will receive additional tools if orders other than PD-1X orders are less than 75 per cent of the month's output.

The rating required for orders placed on hand tool manufacturers is raised from A-9 to AA-4, but orders placed up to June 14 may be delivered on the lower rating. Neither retail dealers buying from distributors nor persons buying tools at stores require ratings.

Large orders in excess of the amount designated in an appended list may be placed only after specific authorization has been granted by WPB.

Under the recent system for re-numbering WPB forms to give them WPB numbers, the PD-1X form has been redesignated WPB-547, and the application form for specific authorization has been re-numbered WPB-1319. This latter form was formerly PD-556.

Distributors' inventories are held down to a sixty day supply for each of the tools listed in the order.

PRICE INTERPRETATION ON BOLTS, SCREWS ETC. EXPLAINED

The General Maximum Price Regulation still establishes, in general, the maximum prices for bolts, nuts, screws and rivets when sold by wholesalers and distributors, according to the Office of Price Administration.

Maximum prices under the General Maximum Price Regulation are the highest charged by the individual seller on a similar sale during March, 1942.

In recent Price Interpretations No. 22, issued by the Office of Price Administration on May 24, it was stated that a wholesaler or distributor of bolts, nuts, screws and rivets who purchased bolts, nuts, screws and rivets from a manufauturer and customarily received "a manufacture's discount" was required to price his products for resale under Maximum Price Regulation No. 147 (Bolts, Nuts, Screws and Rivets).

The interpretation is being clarified by the Office of Price Administration. When one manufacturer purchases bolts, nuts, screws and rivets from another manufacturer, he frequently receives a discount known as "a manufacturer's exchange discount" and is required to price the purchased items for resale under Maximum Price Regulation No. 147. In the interpretation, this "manufacturer's exchange discount" was improperly called "a manufacturer's discount."

Wholesalers and distributors, unless they are also manufacturers, would not in the course of general trade receive a "manufacturer's exchange discount." The office of Price Administration, therefore, is instructing all wholesalers and distributors who are not producers to disregard the interpretation, and to continue to price their bolts, nuts, screws and rivets under the General Maximum Price Regulation.

P. R. NO. 3 AMENDED—PROCESSING AND FABRICATING FACILITIES

Priorities Regulation No. 3, governing the application and extension of preference ratings, has been amended to provide uniform methods in applying ratings to obtain preferential use of processing and fabricating facilities. Previously, this privilege was confined to PRP units operating under Priorities Regulation No. 11. By recent amendment of Priorities Regulation No. 1, the War Production Board provided for the assignment by others of ratings to the use of facilities as well as to the delivery of materials. The amendment of Regulation No. 3 adds provisions telling how these ratings may be used.

The changes provide that:

(1) a rating assigned by the War Production Board to permit a named person to obtain use of particular facilities may be applied only by that individual, and then only to the specified facilities

(2) when a person is authorized to apply or extend a rating to obtain material which he will deliver, or which he will incorporate in material to be produced or delivered, he may make use of the same rating to obtain use of the facilities of a concern regularly engaged in the business to process the rated material;

(3) a person to whom a rating has been extended to obtain use of his facilities may not himself extend the rating for any purpose.

Other changes effected in Regulation No. 3 restrict or eliminate the use of preference ratings to acquire certain materials and products. These are divided into three groups.

List A of the amended regulation names products and services which, by reason of being in adequate supply, may be delivered without regard to preference ratings. Application of ratings to the purchase of any of these is specifically prohibited.

List B contains items not subject to any ratings assigned to the acquisition of maintenance, repair and operating supplies. Ratings assigned for other pur-

(Continued on page 144)

For quickest deliveries of the supplies you need

Dial the I S D First!

Your Industrial Supply Distributor is alert to your needs and interests, every hour of the day.

He knows the many kinds of materials you must have to keep going. He tries to keep you supplied from his many available sources.

He buys on priority—he buys as often as he can—he buys as much as he can get—to cover you and his other customers. Sometimes he doesn't even notify you until the goods are in, or on the way.

Think of your Industrial Supply Distributor as your No. 1 Source. Check with him before you run short. Make it standard practice to telephone your Industrial Supply Distributor *first.*

Know him? *Of course* we do—hundreds of "him" in big and little Industrial Cities all over America have distributed Cle-Forge High-Speed Drills and Peerless High-Speed Reamers for years and years—to *their* satisfaction, and *ours!*

ARMY NAVY

ARMY E NAVY

The CLEVELAND TWIST DRILL COMPANY
1242 EAST 49TH STREET
CLEVELAND

TRADE MARK REG. U. S. PAT. OFF. AND FOREIGN COUNTRIES

30 READE ST. NEW YORK · 9 NORTH JEFFERSON ST. CHICAGO · 650 HOWARD ST. SAN FRANCISCO
6515 SECOND BLVD. DETROIT · LONDON - E. P. BARRUS, LTD. - 35-36-37 UPPER THAMES ST., E.C.4

Today... Favorite Tools ..... Tomorrow...

In War or Peace—

Black & Decker Tools "come through" when time is precious, production demands heavy. At this converted plant, the same powerful Portable Grinders smooth welded joints of four-ton oxidizing tanks (shown here) or finish armor plate for Uncle Sam.

Sanding On metals, wood or plastics, husky Black & Decker Tools help speed all kinds of war equipment. Here a Black & Decker Heavy Duty Sander finishes plywood plane fuselage after heat and pressure mold it into correct shape.

Tapping Black & Decker Tapgun is used for tapping threads on 'round the clock production of 3" shell boxes. Plant operator reports big time saving since he "tooled up" with Black & Decker equipment for all sorts of production jobs.

# of War Industry
Backbone of Postwar Production

☆

HERE are typical reasons why over half of America's war plants today count on Black & Decker Portable Electric Tools to help keep production humming. Jobs such as these are reasons, too, why industrial "post-war planners" will count heavily on the skill and leadership of Black & Decker engineers for tools to turn out "peacetime" products faster and better.

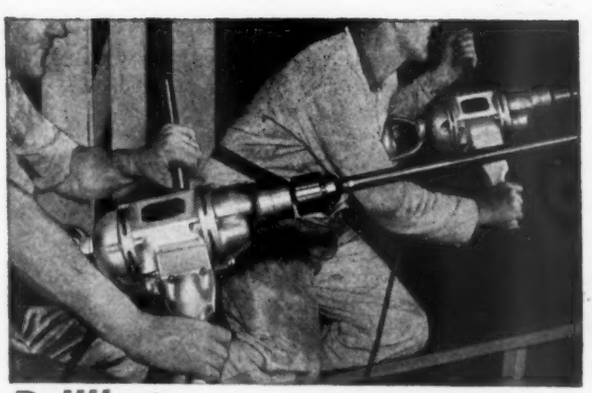
From war producers come such reports as: "Black & Decker Lectro-Shears do the work in one-third the time formerly required" . . . "These Drills, Saws and Sanders lessen fatigue, raise production quality at our boat yard" . . . "Black & Decker Scruguns take lots of abuse from inexperienced workers—but *really hold up*" . . . "We changed to Black & Decker because of your prompt parts and repair service—and the tools are more dependable" . . . "Your Drills helped solve tough wartime problem for us" . . . "Never lost a minute due to tool breakdowns . . ."

These reports—and many more like them—reflect war industry's attitude towards Electric Tool Headquarters in today's terrific production pace. The *complete* line of Black & Decker Electric Tools, the engineering "know-how" back of them, the coast-to-coast Factory Branch service facilities, the Distributors everywhere who offer expert help and tool information—these are the reasons why you can depend on war industry's favorite tools in your postwar planning. The Black & Decker Mfg. Co., 764 Penna. Ave. Towson, Md.

LEADING DISTRIBUTORS EVERYWHERE SELL

Black & Decker

PORTABLE ELECTRIC TOOLS



Drilling Unusual drilling operation on frame of PT boat, details of which can't be disclosed. Whatever the operation, Black & Decker Heavy Duty Drills are indispensable for high speed, continuous production jobs in all boat yards.

Nut Running

Black & Decker Positive Clutch Nut Runner, used here on track shoe bolts of tractor, is a *must* when war producers require high speed nut running or stud setting operations.

(Continued from page 140)

poses, however, may be used to obtain these.

Only ratings assigned or authorized by specified M and P orders may be used to obtain delivery of any of the items included in List C.

Certain other minor changes, largely technical in nature, are also effected by the amended regulation.

USE OF ALLOTMENT NUMBERS FOR UP-RATING ENDS

Use of allotment numbers as an up-rating device for obtaining non-controlled materials ended on June 30, 1943, according to the Controlled Materials Plan Division, of the War Production Board. This action was taken in CMP Regulation No. 3, as amended.

Orders placed during the second quarter, accompanied by preference rating and allotment number, will continue to be "up-rated" orders. However, the application of an allotment number to a rated order after June 30, 1943, will not have any effect on the rating. For example, an order placed in June with a rating of AA-2X to which an allotment number is applied in July, and an order placed in July with a rating of AA-2X and bearing an allotment number, will both be deemed equal in rating to orders rated AA-2X to which no allotment number or symbol is applied.

This means that the top preference ratings for orders placed after June 30, 1943, will be: AAA, AA-1, AA-2, AA-2X, AA-3 AA-4, AA-5, etc., regardless of whether or not they are accompanied by allotment numbers.

Prompt Deliveries ON CASTINGS —LARGE AND SMALL . . . .

● *A large drill press arm cast for a prominent machinery manufacturer.*

● *A small pressure casting designed for a gas engine.*

LEADING manufacturers in many different fields of industry have used Forest City Castings continuously for years—many as long as 25 years.

Forest City production handles castings from a ½ ounce to a half ton—gray iron, semi-steel and high-test semi-steel. Today we can produce and deliver with unusual promptness. Discuss your requirements with one of our casting specialists. He's as near as your telephone.

Gray Iron, Semi-Steel and High Test Semi-Steel Castings

PHONE PROSPECT 5040

THE FOREST CITY FOUNDRIES CO.

2500 WEST 27th ST. • CLEVELAND, OHIO

RATING AA2 RESTORED TO PRIORITY REG. NO. 1

J. A. Krug, Chairman of the War Production Board's Requirements Committee, states that in order to avoid creation of a new "super" priority rating to care for the most urgent programs, the rating of AA-2 was recently restored by amendment of Priority Regulation No. 1. This change provides a bracket between the AA-1 and AA-2X bands, and provides for increased flexibility in the whole structure. The AA-1 bracket is now reserved for the most pressing military production and for certain other essential needs, such as shipments under Russian Protocol and maintenance of specified production and service facilities.

WPB officials said that as a result of the changes announced, requests for the up-rating programs will be reduced to a minimum, once the new rating structure is applied. They pointed out further that, under the Controlled Materials Plan, only as much material is allotted as is available at the mills, and that a manufacturer obtaining an allotment number is assured delivery of copper, steel, and aluminum, regardless of preference ratings, provided his orders are placed with mills within the time limits specified by CMP regulations.

NO DOWN RATING ON MRO ORDERS—DIR. 3 CMP REG. 5

No down rating of maintenance, repair and operating supply orders is required, if such orders were placed prior to May 16, 1943, where an industry was reclassified to a lower rating by the amendment of CMP Regulation No. 5 on May 14, the War Production Board announces. This provision is contained in Direction No. 3 to CMP Regulation No. 5.

The regulation assigns a blanket preference rating of AA-1 to MRO orders for activities listed on Schedule I a rating of AA-2 to those listed on; Schedule II; and an AA-5 rating to any business not listed.

A business previously listed on Schedule I and shifted by the May 14 amendment to Schedule II must use the AA-2 rating, and if eliminated from either schedule, must use the AA-5 rating, on orders placed after May 16.

RATINGS AND SYMBOLS UNDER U-3 AND U-4 MAY BE USED FOR MRO SUPPLIES

Ratings and symbols assigned to telephone and telegraph operators by Orders U-3 and U-4, respectively, may be used to obtain maintenance, repair and operating supplies for offices, warehouses and other facilities essential to business operations, the War Production Board has ruled in issuing official interpretations of the orders.

To KNOW the fundamentals of TAP conservation is to make one tool do the work of TWO. There was a time when a single small tap didn't matter — much. Today, all cutting tools are important. Conserve them.

Used with studied care; the right tap with proper lubrication; WINTER TAPS will produce an unbelievable number of accurately threaded pieces.

Write for your copy of the data booklet illustrated above. It represents the condensed knowledge of taps and tapping gleaned from thousands of thread-cutting problems.

A Division of

THE NATIONAL TWIST DRILL & TOOL CO.

ROCHESTER, MICHIGAN

Winter Brothers

COMPANY Wrentham, Massachusetts, U.S.A.

Among the ASSOCIATIONS

NEW YORK INSTALLS NEW OFFICERS

Norman O. Aeby, Johns-Manville Co., New President Association Now Has 472 Members

Norman O. Aeby, Purchasing Agent of the Johns-Manville Corporation, New York, was elected president of the Purchasing Agents Association of New York at the Annual Meeting held in the Builders' Exchange Club, June 15. He succeeds Walter E. Cummin of White

President Norman O. Aeby
New York City Association

Laboratories, Newark, N. J. Other officers elected are:

Vice President, Millard W. Merrill, United States Metal Refining Co.

Vice President, David M. Meeker, Celanese Corporation of America.

Treasurer, E. B. Fielis.

Members of the Board: James H. Ewing, Calco Chemical Divn., American Cyanamid Co.; Harold G. Butterfield, National Union Radio Corp.; James L. Crosbie, Dexter Folder Co.; and, George F. Plate, Equitable Office Building Corporation.

National Director, Walter E. Cummin, White Laboratories, Inc.

J. H. Leonard is executive Secretary of the New York association, with headquarters at 120 Broadway, New York City.

Membership Now 472

Before presenting the gavel to President Aeby, retiring President Cummin stated that his swan song was one of mixed feelings of satisfaction and regret. During his incumbency the membership has grown from 417 to 472, and the association's financial condition is excellent. He declared that the time expended as president was well worth while for he had made many new friends, and that it had been of material benefit to him in his work for his company. Mr. Cummin was presented with a War Bond in token of his efforts on behalf of the association, the presentation being made by Tom Savage who said that "'Chick' Cummin had everything including a motor boat without gas, and it was the feeling that the bond was the most appropriate memento".

Incoming President Aeby made a very short address following the presentation of auditing and other committee reports, in which he declared that "the next twelve months will be critical and hard and we will need each other's help".

Few Chemical Bottle Necks

The speaker for the evening was William Haynes, well known authority on modern chemistry who discussed the synthetic rubber situation. He stated that there are very few chemical bottle necks and very few shortages in spite of the fact that some 1200 different chemicals are vitally necessary in the war effort.

He declared that since 1936 seven different government bodies had been handling the rubber program, not one of which has had the authority to approve a program, provide the money and see it through. He expressed the opinion that some day there would be an investigation

Retiring President W. E. Cummin
Delivers "Swan Song"

of the rubber program which would probably expose that it has been a No. 1 scandal.

He said that synthetic rubber obviously is highly competitive with natural rubber which has many disadvantages, and that no chemical product that has ever gotten a toehold in a market has been dislodged. "I do not feel that anybody thinks we will not use a certain amount of natural rub-

(Continued on page 155)

L. G. O'CONNOR HEADS LOUISVILLE ASSN.

L. G. O'Connor, Director of Purchases, Office Equipment Co., Louisville, Ky., was elected president of the Purchasing Agents Association of Louisville at its annual meeting. Associated with him in the official family are the following: First vice president, Calvin Marcus, Edward H. Marcus Paint Co.; Second vice president,

President L. G. O'Connor, Louisville Association (left) accepts Gavel from Retiring President E. E. McCully

Albert E. Loeffler, Jr., Louisville Tin & Stove Co.; Secretary, R. L. Schmitt, Louisville Car Wheel & Railway Supply Co.; Treasurer, John A. Reeb, Liberty National Bank & Trust Co.; Assistant Secretary, J. T. Kinberger, Gulf Refining Co.; National Director, E. E. McCulley, Courier-Journal Job Printing Co.; Directors, G. W. Leep, Adler Mfg. Co., W. M.

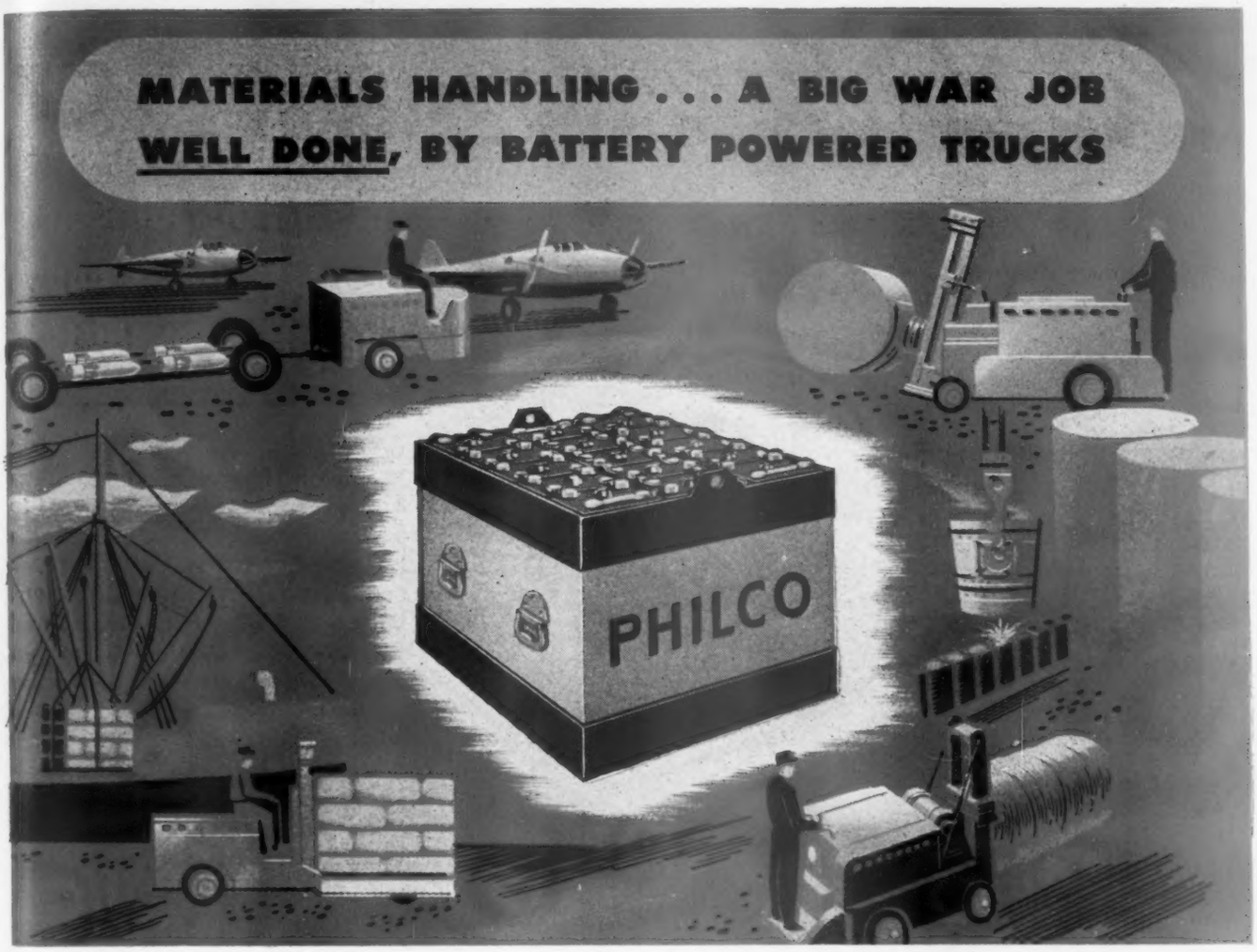
Second V. P. Albert E. Loeffler
Louisville Association

Kerrick, Mengel Co, and T. A. Corcoran, Courier-Journal & Times.

President O'Connor has been a member of the association for eight years, serving as secretary five years, and as vice president one year.

First Vice President Marcus also has

(Continued on page 150)



POWERED BY PHILCO "XL" BATTERIES, TRUCKS HAUL 10% MORE MATERIALS

IN war plants everywhere, electric industrial trucks are assigned the tremendous job of moving materials *where* they're wanted, *when* they're wanted! And everywhere, too, these trucks are powered with Philco "XL" Batteries because with a Philco in the battery box, trucks do 10% more work! Philco "XL" Batteries are engineered to give you 10% extra capacity with extra wallop... longer life... better performance, too. For complete details, write for latest Philco Industrial Truck Battery Catalog.

PHILCO CORPORATION
STORAGE BATTERY DIVISION,
TRENTON, NEW JERSEY
Sales Agents in all Industrial Centers

Replace with **PHILCO** *Industrial Batteries*

Cleveland Quality ... Your Assurance of Strength and Accurate Fit in All Cap and Set Screws and Special Upset Parts

SPECIALIZATION in the upset process here at "Cleveland" has brought profitable advantages to users searching for high standards in fasteners. You can get all types of bright full finished, 1035 heat treated and alloy cap screws, and properly case hardened set screws from "Cleveland"—all made by the newest refinements in Kaufman Process procedure. Special upset parts to your specifications. Most sizes of standard items carried in stock at our convenient warehouses. Write for samples and prices.

THE CLEVELAND CAP SCREW COMPANY
2917 East 79th Street • Cleveland, Ohio

1035 and Alloy Heat Treated Cap Screws
Set Screws—All types
Milled Studs—Standard or Special Threads
Special Upset Parts

Cleveland Cap Screws

Set Screws and Special Upset Parts

Made by the Originators of the Kaufman Process for Greater Strength and Accuracy

Specialists for 26 years in Headed and Threaded Products

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CHICAGO: 726 W. Washington Blvd. . **HAY**market **1392**
PHILADELPHIA: 12th & Olive Sts. . **POP**lar **7530**
NEW YORK: 47 Murray St. . . . . **BARC**lay **7-5088**
LOS ANGELES: 1015 E. 16th St. . . **PROS**pect **8326**

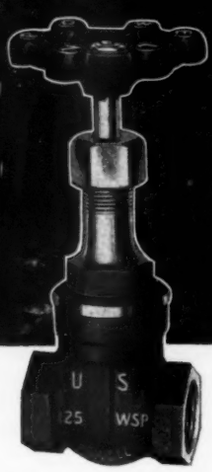


Fig. 500—Bronze Gate Valve for 125 pounds W. P. Has screwed ends, screwed-in bonnet and taper-wedge solid or double disc.

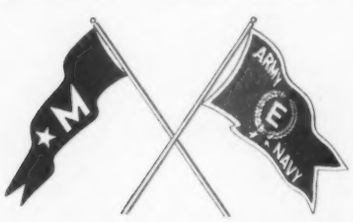
Fig. 150—Bronze "Union Disc" Globe Valve for 150 pounds W. P. Screwed ends, union bonnet, and renewable vulcanized composition disc—especially adapted for throttling service—for the control of low-pressure steam, oil, water, gas, etc.

Beginning of a long life in the POWELL Line

Before a Powell Valve earns the right to bear this time-honored name, it is called upon to prove its acceptability into an illustrious family. In blunt words, it must fill a need—actual or anticipated—before it is permitted the responsibilities of the family name.

From the moment of its conception by Powell engineers and consultants, that valve is engineered to its purpose. It must meet every requirement of "Standard of Control", which is the family motto.

This goes for *all* Powell Valves . . . of every type . . . of every proved-in-service material . . . for every need. Powell takes this special care because its near-century-old name rests upon the *pre-determined performance of every Powell Valve.*



The Wm. Powell Co.

Dependable Valves Since 1846

Cincinnati, Ohio

POWELL VALVES

★

17 POINTS for QUICK and CAPABLE

Cooperation

on your

FASTENING PROBLEMS

from our Field Engineers

★ Trained to solve your fastening problems—to suggest correct methods and products meeting today's rigid specifications—the Central Screw Company representative in your territory is ready to help you determine the availability of your product requirements.

Bridgeport, Conn.
952 Main Street,
O. E. Pfannkuch

New Orleans, La.
314 Balter Bldg.,
E. C. Beck

Chattanooga, Tenn.
702 Provident Bldg.,
Pierson-Deakins Co.

New York, N. Y.
4 W. 22nd Street,
R. C. Christie & Co.

Dallas, Texas
1101-7 McKinney Ave.,
Air-O-Line Co.

Philadelphia, Pa.
265 Drexel Bldg.,
C. F. Kreger

Denver, Colorado
232 Dahlia Street,
Edw. C. Swan

Phoenix, Arizona
401 W. Jackson St.,
Dooley & Marinack

Detroit, Michigan
2842 W. Grand Ave.,
Stanley A. Boltz

Portland, Oregon
1233 N. W. 12th Ave.,
National Steel Sales

Kansas City, Mo.
1110 Woodland Ave.,
J. A. Clancey

Rochester, N. Y.
82 St. Paul Street,
A. W. Schmitz

Los Angeles, Calif.
1855 Industrial St.,
Rayburn-Judd Co.

St. Louis, Mo.
317 N. 11th Street,
J. R. Edwards

Minneapolis, Minn.
100 N. 2nd Street,
Vincent Brass & Cop. Co.

San Francisco, Calif.
355—9th Street,
Rayburn-Judd Co.

Seattle, Wash.
1250 First Ave. So., National Steel Sales

CENTRAL SCREW COMPANY

3515 Shields Ave., Chicago, Ill.

CENTRAL

You can depend on Central

(Continued from page 146)

been a member of the association for eight years, and during that time has served as assistant secretary, director and second vice president.

Second vice president Albert E. Loeffler, Jr., is now serving in his first elective office with the organization. He has been active for several years on various important committees, and served as first chairman of the important Budget Committee.

Treasurer John A. Reeb is serving his third consecutive term in that office. He has been a member of the association for four years. And, incidentally, he has been associated with the Liberty National Bank & Trust Company of which he is Purchasing Agent for 35 years.

Secretary R. D. Schmitt, is one of the charter members of the association, a former president and national director, and is now serving his second term as secretary. He has been the managing director of the three industrial exhibits styled "Instruct-a-Show", given by the association in 1939, 1940 and 1942. Mr. Schmitt finds the time somehow to carry on various extra-curricular business and association activities so to speak, for he is an instructor on safety at the University of Louisville Engineering school, is on the Board of directors of the Louisville Y. M. C. A., and the Kentucky Y. M. C. A., and is secretary-treasurer of the Pastime Boat Club.

Assistant-Secretary Kinberger has been associated with Gulf Refining Company for 29 years. He has been a member of

(Continued on page 155)

Secretary R. D. Schmitt
Louisville Association

Director G. W. Leep
Louisville Association

1943-1944 OFFICIAL FAMILY OF SYRACUSE AND CENTRAL NEW YORK ASSOCIATION

Here are the new officers of the Purchasing Agents Association of Syracuse and Central New York, which has headquarters in the Onondaga Hotel at Syracuse, N. Y. F. S. Thompson, Lowman Folding Box Corp., Syracuse, N. Y., president has served the association in nearly every capacity as chairman of various committees and officer, and recently was chairman of the association's 25th Anniversary Committee, at which he distributed membership placques to three of the charter members. Leroy E. Jones, Utica Knitting Co., Utica, N. Y , first vice president, served for two years as membership chairman and is accredited with being largely responsible for the present position of the Syracuse association as third largest in District No. 8 of the National Association. L. A. Saunders, New Process Gear Corp., Syracuse, N. Y., second vice president, recently completed two years as treasurer, as did Director M. E. Jennings who served two years preceding Mr. Saunders. F. J. Quinn, Purchasing Agent of Aviation Div., Easy Washing Machine Corp., Syracuse, N. Y., acquired the habit

(Continued on page 155)

OFFICIAL FAMILY, PURCHASING AGENTS ASSN. OF SYRACUSE & CENTRAL NEW YORK
Left to right: G. W. Simon, Treasurer; C. J. Kuckhoff, National Director; F. J. Quinn, Secretary; F. S. Thompson, President; L. A. Saunders, 2nd Vice president; L. E. Jones, 1st Vice president.

NEVER BEFORE IN ANY WAR...

THE MODERN *BOMBER*

nor the modern

Preformed wire rope

THAT HELPS IT PERFORM

Yes, this is a new and different war. It's a long stride from the frail crates which crept across the troubled skies of 1918 to the modern bombers—today's fabulous flying artillery.

New, also, are the steel sinews of these great planes, made for the first time of Preformed Wire Rope. They convert split-second human reflexes into annihilating action. They race the decisions of alert, fighting brains to rudder, ailerons and elevators; to engines and guns; to turrets and bomb releases.

Preformed's peacetime record won this coveted war assignment. For nearly 20 years Preformed has protected and multiplied manpower. It has reduced delays from accidents and change-overs. It has cut costs. Total this—it means top-speed production, which today is imperative.

Ask your own wire rope manufacturer or supplier

No Longer is "PHILOSOPHER'S WOOL" pulled over a Brass-Caster's Eyes

In the old days, a brass-caster stirring his crucible would often get a whiff of "Philosopher's Wool" from the boiling zinc'... like steam from the fabled Philosopher's Stone... that would give him the "spelter's shakes". Yet it never occurred to him that the casting might suffer because of his passing staggers. For he did most of his work by smell or touch or some other rule of thumb. Then, brass was sold "as is", and no questions asked.

But there's no trace of fog remaining in brass-making practice today. At Bristol, any question asked by any brass-fabricator can be answered promptly and specifically... and the answer will hold good throughout any number of sheet, rod or wire shipments that are completed to the specifications agreed upon. Automatic production control, repeated laboratory checks, and searching physical tests guarantee that the customer gets his brass from Bristol exactly right for the job it has to do.

That's the way war-production plants all over the world are getting Bristol Brass today... in the ever-increasing quantities needed to seize the offensive on all United Nations fighting fronts. And when the war is won, Bristol will have a lot of new knowledge to put to work for the products of peace.

BRISTOL BRASS

★ *Buy War Bonds to Buy Brass for Bullets* ★

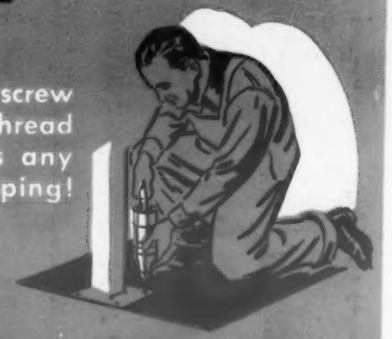
THE BRISTOL BRASS CORPORATION, MAKERS OF BRASS SINCE 1850, AT BRISTOL, CONNECTICUT

SAVES MAN-HOURS... 3 WAYS!

SHAKEPROOF Thread-Cutting Screws

Type 1 for metal applications

-1-
Because this screw cuts its own thread it eliminates any need for tapping!



-2-
Thus — it does away with the buying of taps

-3-
And . . . the maintenance of taps!

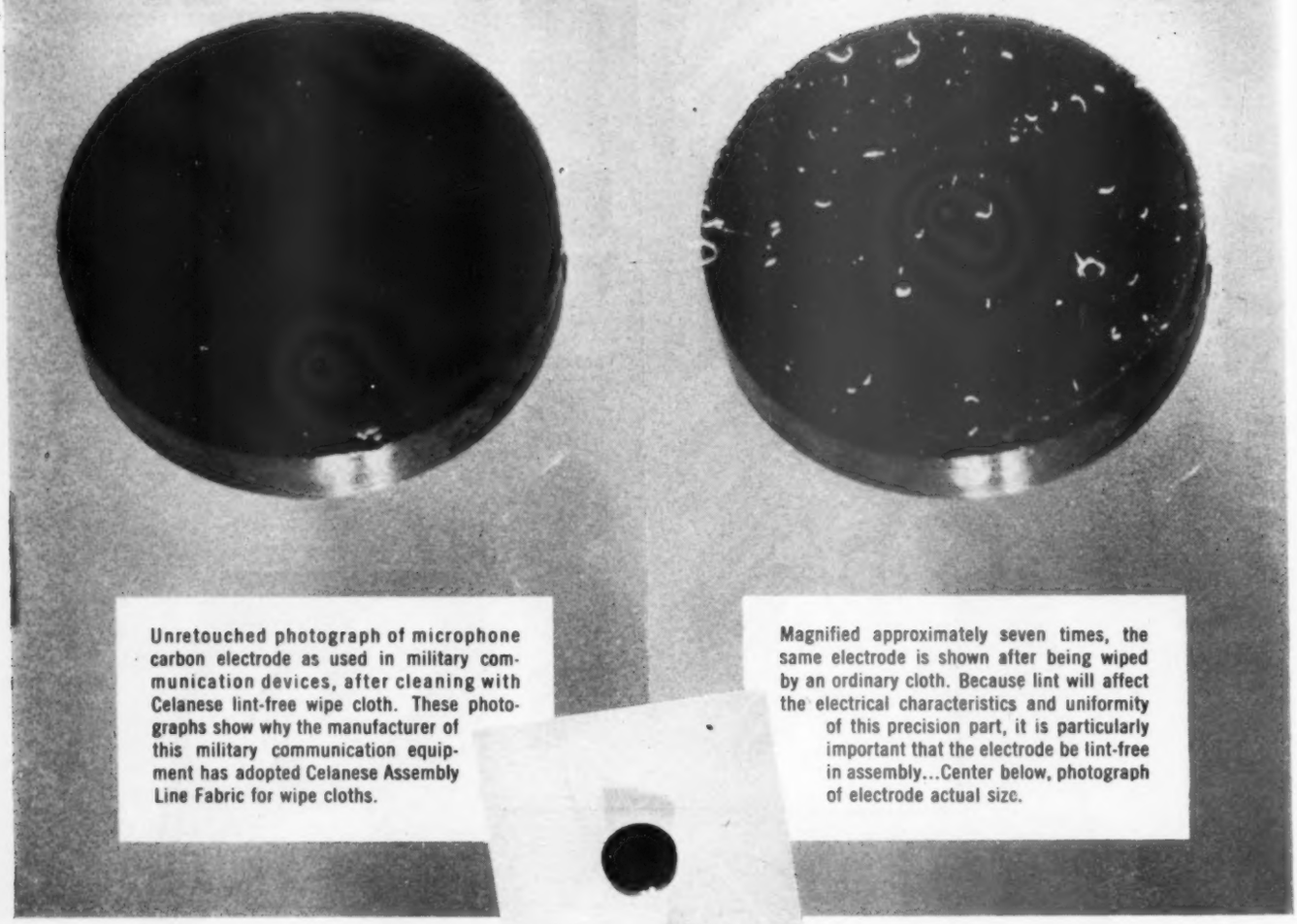
ARMY E NAVY

plus . . . its ability to provide a stronger, tighter fastening than is ordinarily possible with machine screws in pre-tapped holes.

SHAKEPROOF inc.

DISTRIBUTOR OF SHAKEPROOF PRODUCTS MANUFACTURED BY ILLINOIS TOOL WORKS
2501 North Keeler Avenue, Chicago, Illinois
Plants at Chicago and Elgin, Illinois • In Canada: Canada Illinois Tools, Ltd., Toronto, Ontario

Precision's Unseen Foe



Unretouched photograph of microphone carbon electrode as used in military communication devices, after cleaning with Celanese lint-free wipe cloth. These photographs show why the manufacturer of this military communication equipment has adopted Celanese Assembly Line Fabric for wipe cloths.

Magnified approximately seven times, the same electrode is shown after being wiped by an ordinary cloth. Because lint will affect the electrical characteristics and uniformity of this precision part, it is particularly important that the electrode be lint-free in assembly...Center below, photograph of electrode actual size.

Comparative tests in cleaning metal and glass surfaces and lenses are the reason why manufacturers of communication devices, precision instruments and optical equipment are increasingly adopting lint-free Celanese* Assembly Line† fabrics for uniforms, hats, gloves and wipe and bench cloths.

For further information, consult our Precision Fabrics Division, Dept B. B.

CELANESE CORPORATION OF AMERICA

180 Madison Avenue, New York 16, N. Y.

*Reg. U. S. Pat. Off. †Trademark

Under a current ruling of the Federal Trade Commission, CELANESE yarn is classified as RAYON.

NEW YORK CITY ASSOCIATION

(Continued from page 146)

ber, but it will not be as much as it was, and the price of rubber is never going to reach the price of $3.10 a pound again.", he said. Mr. Haynes also stated that the Government promised certain interests to scrap the synthetic rubber plants after the war, this promise being "couched in diplomatic language.'

The war he said is a war of technologies, even though we may think of it as a highly mechanized war. The modern tool of industry is research, he declared, and man-made materials will revolutionize industries and "make a scrap of paper of old ideas and international trade".

CENTRAL NEW YORK ASSOCIATION

(Continued from page 150)

of being secretary of the association in 1939. He was made editor of the association's publication, the Central New York Purchaser in 1936. Also, he served as

F. S. Thompson, President, Purchasing Agents Assn. of Syracuse and Central New York.

president of the association for the 1937-1938 term.

Committee chairmen of the association are as follows: National Affairs, C. J. Kuckhoff; Auditing & Budget, F. L. Howard; Education & Standardization, E. R. Francis; Publication & Publicity, C. J. Kuckhoff; Membership, A. D. Hanley; Program & Entertainment, M. E. Jennings; Commodities and Fuel, L. A. Saunders; Attendance & Acquaintance, J. H. Durham. The association was organized in 1918, and meets the fourth Tuesday of each month.

LOUISVILLE ASSOCIATION

(Continued from page 150)

the association for 15 years, and has served in all offices except the presidency —which he has refused to accept on two occasions. Mr. Kinberger has also served on the Business Survey Committee of the National Association.

National Director Edgar E. McCulley, completed a term as president in May of this year after being vice president. He has been a member of the association since 1937 when he became Purchasing Agent and Comptroller of the Courier-Journal Job Printing Co. He is a member of Sigma Chi Fraternity, holds a

(Continued on page 156)

From Blueprint to Shipping Room
Under constant laboratory control from blueprint to shipping room, HOLTITE fastenings leave our large modern plant to become faultless parts of America's great war machine.
From metallurgical control of raw materials, through precision production, to exact heat-treating or finishing, these rugged fastenings are rigidly inspected, gauged and tested at every stage of manufacture. Our skilled workers, aided by every scientific device, and supervised by an experienced Engineering Staff, produce huge quantities of precision products that insure trouble-free performance in every type of assembly. Specify HOLTITE on your next order.
Send for New Catalog on Company Letterhead
Continental Screw Company
CONTINENTAL
SCREW CO.
New Bedford, Mass., U.S.A.
BUY MORE WAR BONDS

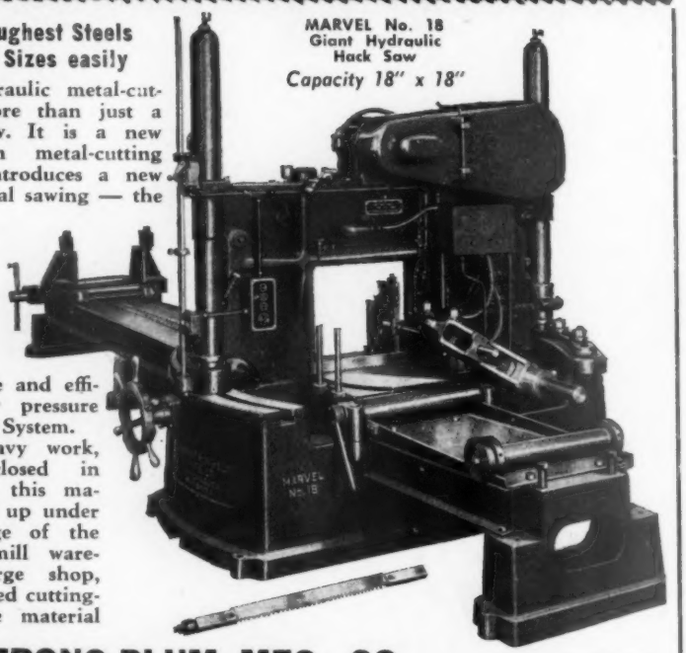
MARVEL SAWS

CUTS the Toughest Steels and Largest Sizes easily

This giant hydraulic metal-cutting saw is more than just a larger hack saw. It is a new development in metal-cutting methods that introduces a new principle of metal sawing — the Roll-stroke blade action makes it possible to cut the toughest steels in the largest sizes easily and rapidly. It also permits a simple and efficient, very low pressure Hydraulic Feed System.

Built for heavy work, completely enclosed in heavy housing, this machine will stand up under the rough usage of the average steel mill warehouse and forge shop, where it will speed cutting-off, and reduce material loss.

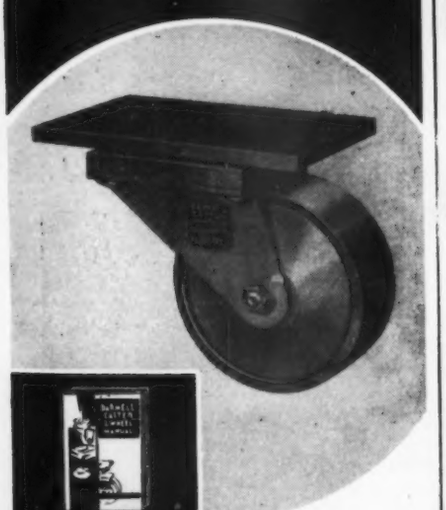
MARVEL No. 18
Giant Hydraulic
Hack Saw
Capacity 18" x 18"



ARMSTRONG-BLUM MFG. CO.
"The Hack Saw People"
5700 Bloomingdale Ave., Chicago, U. S. A.
Eastern Sales Office: 225 Lafayette St., New York

Write for Catalog

DARNELL CASTERS



FREE Manual FOR THE ASKING!

KEEP TURNING and EARNING

DARNELL CORP., LTD., LONG BEACH, CALIF.
10 N. CLINTON, CHICAGO • 60 WALKER ST., NEW YORK

DIAMONDS *for Victory*

BIG-HED-NIBS
LOC-KEY-SET
RE-SET-ABLE

Cooler dressing
Closer tolerances
Micrometer Accuracy

Because: W'ng key heat dissipation and absolute diamond lock nib.

● **Three grades of diamonds. Common quality $12 per karat. Medium quality $24 per karat. Select quality $48 per karat. (Contour template diamonds supplied only in Medium and Select quality.)**

All diamond sizes ¼ to 10 karat are nib mounted for immediate shipment . . . Billed subject to approval. Specify quality of diamond wanted. We recommend a minimum size of one karat for each 6" diameter of grinding wheel. (24 hour resetting service, $1.00 post paid.)

Grinders instruction card free.

The Most Complete and Up-to-the-Minute Line of Diamond Tools for War Production. Send for Free Catalog.

DIAMOND TOOL COMPANY, Not Inc.
Sheldon M. Booth, Pres.
908 E. 41st Street CHICAGO, ILL.

(Continued from page 155)

B. S. degree from the University of Kentucky, and is a member of the Masonic Lodge.

Director W. M. Kerrick is Purchasing Agent and a member of the Board of Directors of the Mengel Company. He is the original Louisville member of the National Association of Purchasing Agents, having joined as a member of the Indianapolis Association before the

Director W. M. Kerrick
Louisville Association

formation of the Louisville unit. He is a founder of the Louisville Association and a charter member, and its first president having served in this capacity for the first three years of the local association. He is said to be the Louisville association's most active member and has served either as president or director almost constantly since the formation of the association. Mr. Kerrick recently started his fifth term as vice president of the seventh district and member of the executive committee of the National body. This is believed to be a record for service on that Committee. Also, he is a member of the Lumber Committee of the N.A.P.A.

Mr. Kerrick is active in Masonic circles and is a member of the Board of Directors of Kosair Crippled Children's Hospital. And he and his family

National Director Edgar E. McCully
Louisville Association

enjoy a beautiful country estate in Jefferson County just outside of Louisville.

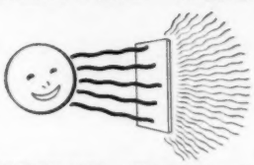
Director G. W. Leep has been with his company, the Adler Manufacturing Co., for 29 years. He is a graduate of Dupont Manual Training High School, Louisville, and was a first lieutenant in World War I, serving eighteen months as regimental bayonet instructor. He was presi-

(Continued on page 158)

TOOL COMPANY PUTS DAYLIGHT TO WORK WITH BLUE RIDGE FROSTED AKLO GLASS

"We Glazed Both South and West Sides with Aklo To Eliminate Glare"—Armstrong-Blum Mfg. Co.

THE 3R's OF FROSTED AKLO



REDUCES GLARE—Eliminates eyestrain and employee's fatigue.

RETARDS SUN HEAT—Keeps workers comfortable on their jobs.

RENDERS SAVINGS—Eliminates shades or painting of glass.

EYESTRAIN REDUCED—PRODUCTION UP IN NEW CHICAGO TOOL-MAKING PLANT

Realizing the importance of controlled daylight and its relation to employee comfort and accurate production, executives of the Armstrong Blum Manufacturing Company specified Blue Ridge Frosted Aklo on "the two sunny sides" of its fine, modern plant addition in Chicago's Northwest Side. The results, in decreased glare, greatly improved employee working conditions and improved production, represent another milestone in Blue Ridge's many contributions to industrial lighting efficiency.

Frosted Aklo softly diffuses incoming natural light—reducing eyestrain. It absorbs approximately 97½ per cent of the sun's infrared heat rays—increasing working comfort. In air-conditioned areas, it contributes to lowered operating costs. And it eliminates the necessity for frequent and costly painting of glass or the use of window shades.

Frosted Aklo, made by the Blue Ridge Glass Corporation of Kingsport, Tenn., is sold by Libbey·Owens·Ford through leading glass distributors. It is available in hammered and ribbed patterns, both wired and unwired. See your glass distributor or write Blue Ridge Sales Division, Libbey·Owens·Ford Glass Company. Room 573, Nicholas Building, Toledo, Ohio.

L O F

BLUE RIDGE AKLO GLASS

Heat-Absorbing · Glare-Reducing · Figured and Wire Glass

BLUE RIDGE GLASS CORP. MANUFACTURERS OF QUALITY GLASS KINGSPORT · TENN.

NON-FLAMMABLE
Safe...Easy to use
ECONOMICAL

NON-SKID... Removes danger of accidents from slipping, preventing loss of man hours and possible lawsuits

FIRE-SAFE... Compounded entirely of non-burnable materials

Whisk away messy, hazardous oil and grease deposits with lightning-fast CAREY Asbestos Sweeping Compound. So quick, so thorough, so *easy to use*—it's like MAGIC!

CAREY Asbestos Sweeping Compound is an improved, efficient, inexpensive, *fire-safe* compound for sweeping up oil and grease. It is the ONLY product of its kind which has been given the "Class I, Non-Combustible" rating by Underwriters' Laboratories, Inc. Highly absorptive and mildly abrasive. Used dry; nothing to add. *Non-skid*—lessens danger of accidents from slipping. Harmless to floors, hands, shoes, and clothing. Economical—use over and over until fully saturated.

This compound is excellent for soaking up acids around pickling vats, storage battery spillage, cleaning solutions, etc.

Play SAFE . . . get RESULTS . . . with CAREY Asbestos Sweeping Compound. Prompt shipments in 50-lb. bags from 45 branch warehouses. Free trial will furnish convincing proof. Samples and full information on request. Write Dept. 68

CAREY Asbestos Sweeping Compound falls in "Class 1, Non-Combustible"—according to the Standard of Underwriters' Laboratories, Inc., for the classifications of Sweeping Compounds, in which Class 1 includes "Noncombustibles"; Class 2 "Nonflammables"; and Class 3, "Slow-Burning Mixtures."

THE PHILIP CAREY MFG. CO. LOCKLAND, CINCINNATI, OHIO
Dependable Products Since 1873
In Canada: The Philip Carey Company, Ltd. Office and Factory: Lennoxville, P. Q.

(Continued from page 126)

dent of the Louisville Association in 1939-40, and National Director the following year. He also is a member of the Lumber Committee of the N. A. P. A. Mr. Leep is on the board of directors of Strathmore Manor. Ky., a suburb of Louisville, and is a member of the Big Springs Golf Club.

Director T. A. Corcoran is Purchasing Agent for the Courier-Journal and

Director T. A. Corcoran
Louisville Association

Louisville Times Company, and its affiliated Radio Station W. H. A. S. He has served terms as president, vice president and national director of the local association, and at present is chairman of the Speakers and Program and Publicity committees.

In 1939-40 Mr. Corcoran was a member of the Executive Committee of the N. A. P. A., and vice president of the seventh district. He was a member of a special committee of the N. A. P A. to study local association programs. He has also served as a member of the Boffey Award Committee, and has been a member of the National Association's paper Committee since its organization.

Mr. Corcoran is a citizen of New Albany, Indiana, across the Ohio River from Louisville, and is a member of the New Albany Country Club. He is married and has three sons. His eldest son, Charles, is a U. S. Army aviation cadet at Keesler Field, Biloxi, Miss.

WASHINGTON, D. C. ASSN. INSTALLS OFFICERS

The new officers of the Purchasing Agents Association of Washington, D. C., were installed at the June 8 meeting of the association held in the University Club, as follows:

President, Clifton E. Mack, Director of Procurement, U. S. Treasury Department.

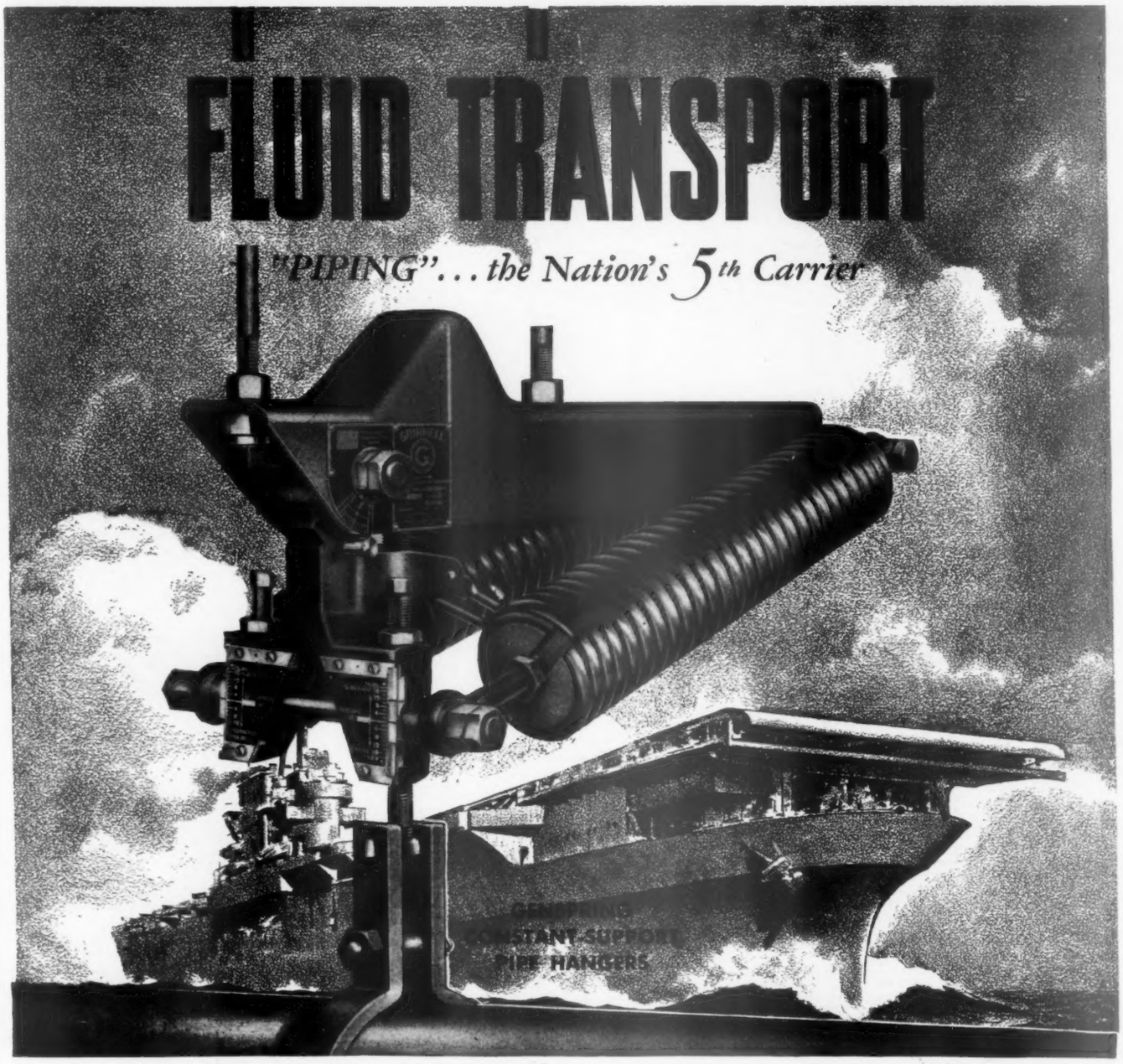
Vice President, Frederick L. Sullivan, Purchasing Agent, Catholic University.

Secretary-Treasurer, John P. Kurtz, Director of Procurement, Pennsylvania Central Airlines.

National Director, E. P. Scully, General Purchasing Agent, Engineering & Research Corporation.

Board of Directors: E. P. Scully; John Fleming, Purchasing Agent, Capital

(Continued on page 160)



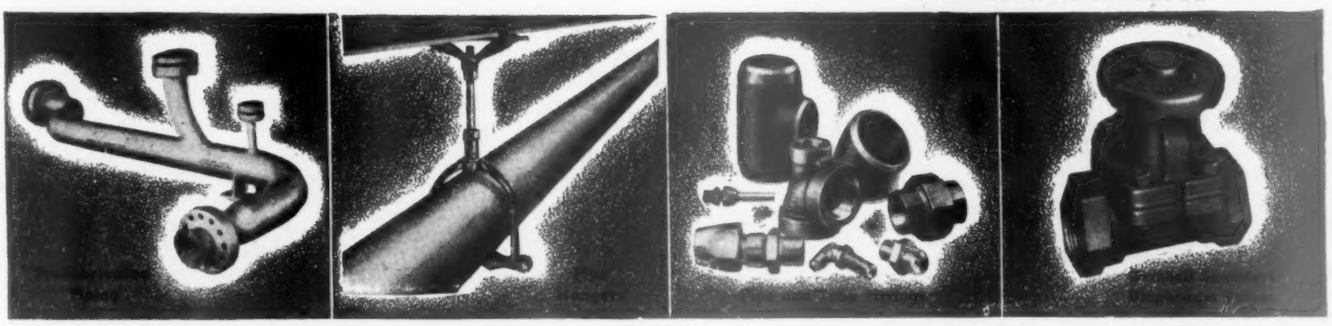
SEAGOING PIPING TAKES AN EXTRA BEATING. Piping must be properly engineered and fabricated to withstand all the punishment that goes with a high pressure steam installation *plus* the extra shocks of rough seas.

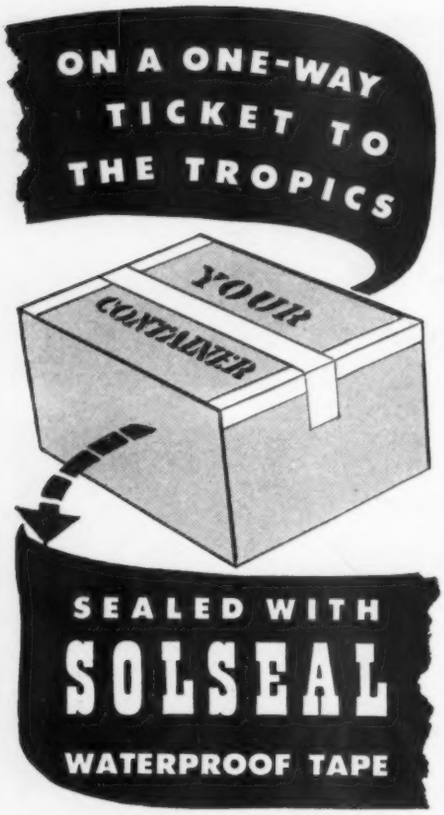
Grinnell is meeting these and similar extreme demands for specially engineered piping systems both afloat and ashore. Grinnell plants offer the most modern facilities for fabricating the connecting links which convert a pile of pipe into a complete piping system for efficient FLUID TRANSPORT.

For new war construction and maintenance and repair of existing piping, call Grinnell Company, Inc., Executive Offices, Providence, Rhode Island. Plants and offices throughout the United States and Canada.

GRINNELL

WHENEVER **PIPING** IS INVOLVED





Excerpts from the diary of a tropics-bound container

". . . and when it came to facing the elements, I'm here to tell you I *really* had to take it!

"It started when they stood me alongside the other containers on the freight platform (there just was no available warehouse space to keep us snug and dry), half-buried in mud, with rain pelting down on me for the better part of two weeks! . . Then the loading dock . . . more rain and sleet, enough to make me want to fall apart from waterlogging, but I held up under it in great shape. Once on the ship I was set down in the hold, partially under water the entire trip . . . water in the hold minimizing the danger of fire under torpedo attacks.

"When I finally arrived at port of destination we didn't dock. To speed things along I was dumped into the ocean to be picked up at low tide . . . after which I was toted right up to advance positions through pelting tropical rains. You'd think that long before that I'd have burst my seams! . . . Not a bit of it. I was sealed with **SOLSEAL** Tape so that we could stand rain, high humidity and immersion *for weeks at a time!* And did I come through with colors flying? I'll say I did—and how!"

***SOLSEAL** Waterproof Tape is available in 30/30/30 60/30/30, and 60 lb. Wet Strength Kraft with Solseal adhesive. Also available string filled for use as a strapping tape. Manufacturers whose containers are subject to high humidity, rain, and actual imersion are urged to write for free sample coil with Solseal Solvent for testing purposes. Specify type of Solseal sample desired.*

A McLAURIN-JONES Product

McLAURIN-JONES COMPANY · BROOKFIELD · MASS.

(Continued from page 158)

Transit Co.; Leon Virtz, Washington Institute of Technology; and, A. R. Miller, Purchasing Agent, Schuttig Company.

Mr. Mack described his objectives toward expansion of the local association and stressed the importance of attendance at meetings. Among committee appointments to be announced in the near future are a Membership Committee, Committee on Education, and Committee on Entertainment and Publicity.

The meeting was featured by a discussion of conservation of supplies, material and equipment. Mr. Mack stressed the importance of conservation and urged that the purchasing agents give the subject serious consideration as every element of production and consumption is becoming more acute. New equipment is difficult to procure while even used equipment may soon be unobtainable.

Mr. Scully is accredited in doing an outstanding job in developing and organizing the association, the first meeting of which was held October 14, 1942. It now has 23 members, and a membership drive is underway which it is expected will be the means of greatly increasing this number. The association was formally accepted as a member of the National Association in January of this year. Frederick L. Sullivan, now vice president, was presented with a Sheaffer desk pen set for his activities as secretary-treasurer, the presentation being made by R. M. Brennan who is Purchasing Officer for the District of Columbia.

MATT POUTTU MADE PRESIDENT OF OREGON ASSOCIATION

The Purchasing Agents Association of Oregon, elected the following officers at its annual election:

President, Matt Pouttu, Oregon Culvert & Pipe Co.

Vice President, Gordon T. Hanson, Stimson Lumber Co.

Secretary, Clifford B. Amos, Bingham Pump Co.

Treasurer, W. F. Gorrell, Munnell & Sherrill.

National Director, Glen M. Ede, Willamette Hyster Co.

Executive Committee: O. K. Buckner, Electric Steel Country Co.; E. R. Schmitt, Schmitt Steel Co.; and, L. A. Saunders, Aluminum Company of America.

The new president served as secretary of the association for a period of nine years up to a year ago, and according to the *Oregon Purchasing News* has perhaps had more to do with the upbuilding of the organization during the last decade than anyone else. The election was in accordance with the report and recommendation of the nominating committee of which Harold H. Cake was Chairman, with Ross Cooper and Gordon Lindsey as his associates.

The operations of the blood bank and preparation of plasma were explained to the Portland Association at its last May meeting, and on June 4 Colonel Fulmer, Commanding Officer of the Army Induction Center, presented a talk on "Selective Service Induction". Presentation of a Technicolor film "Unfinished Rainbows", produced with Hollywood talent by the Aluminum Company of America, telling the story of aluminum from the time of its discovery to its present position in present day living, featured the June 11 meeting.

President Matt Pouttu, who was Secretary for Nine Years

C. M. P. AND "RAILROADIN" AT SEATTLE

Washington State Association has Twenty-Two Committees

Industrial, commercial and governmental Purchasing Agents from various points in western Washington gathered at the Washington Athletic Club in Seattle, Thursday evening, June 10, for the monthly meeting of the Purchasing Agents Association of Washington, with President Charles V. Tinker presiding. Featured on the evening's program which was arranged by Vice President D. P. Brewer, were an "Analysis of CMP-5 Covering Maintenance, Repair and Operating Supplies", by Carl Nissler, WPB Consultant, Seattle office; and "Railroadin' "—sound movies in technicolor by the General Electric Co., which were shown by Frank Barnes, technical engineer; also, Discussions Chairman Wm. F. Schultz, Superior Portland Cement Co., Inc., presented C. R. Ragsdale of the Seattle Tent & Awning Co., who talked on "New Income Tax Plan as it Applies to Individuals", and E. R. McCaffrey, Bethlehem Steel Co.,

(Continued on page 163)

Looking ahead with Asbestos

TODAY it's wise to build or make any *necessary* repairs with long-lasting materials. That's why so many builders and home owners are looking ahead by specifying K&M "Century" Asbestos-Cement Roofing Shingles and Siding.

K&M "Century" Shingles and Siding are truly life-time products . . . resistant to fire, weather, rot and termites. You'll find them giving this kind of maintenance-free service—in war housing projects, on homes, farms, industrial plants and commercial buildings—all over the country. You'll recognize them readily by their unique and colorful beauty. It is this quality of distinctiveness that has made "Century" Roofing and Siding such a popular favorite with home owners for years.

Asbestos roofing and sidings are not restricted NOW by Conservation Order L-41

*For reasons of utmost importance to our country's war effort, the War Production Board has revised Order L-41 to permit the use of asbestos roofing and siding wherever maintenance and repair are required, without value or quantity limitations.

*A full explanation of the reasons will be mailed on request.

* * *

Nature made asbestos;
Keasbey & Mattison, America's asbestos pioneer, has made it serve mankind . . . since 1873

KEASBEY & MATTISON

COMPANY, AMBLER, PENNSYLVANIA

Makers of

asbestos-cement shingles and wallboards; asbestos and magnesia insulation for pipes, boilers, furnaces; asbestos textiles; asbestos electrical materials; asbestos paper and millboard; asbestos marine insulations; asbestos acoustical material; asbestos packings; asbestos corrugated sheathing and flat lumbers; asbestos-cement pipe for water mains

"SECOND GEAR" or "low gear" for the tough spots

"fluid drive" welding on the straightaway!

- **JUST ONE ADJUSTMENT** gives exact welding current desired. No "nuisance gadgets"—exciters, rheostats or reactors.
- **ARCONTROL** gives choice of three types of arc.
- **NO "DROOP"** in welding current when machine warms up. Just pre-set—and *weld!*
- **BUILT TO "TAKE IT"!** Banging can't damage heavy, one-piece seamless steel frame! No tin boxes—all vital parts are *inside*.

Here's new, handy power for those tough jobs—with the same timesaving, rock-steady pre-set current adjustment that only Flexarc welders give you!

It's ARCONTROL. This new welding feature, combined with Westinghouse single, pre-set current adjustment—is just what your operators have always wanted. It provides simple current control—flexible enough to tackle any job.

New ARCONTROL brings you a choice of THREE optional ranges of operation. "Normal" range, like fluid drive, gives you fast, flexible operation that meets most conditions. "A" and "B" ranges, like second and low gear, provide reserve ranges of power for unusually tough conditions.

Speed your operator training by specifying easy-to-operate Westinghouse D-C Welders. Write for complete details. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

J-90470

Westinghouse FLEXARC WELDERS

PLANTS IN 25 CITIES . . OFFICES EVERYWHERE

(Continued from page 160)

who talked on "Steel—From Mine to Mill". Reports on the National Convention in New York were made by C. V. Tinker, William O. McKay Co., president of the association, and Earl C. White, editor and manager, Washington Purchasing Agent and Manufacturer.

Twenty-Two Committees

Twenty-two committees constitute the divisions back of the officers of the Purchasing Agents' Association of Washington (State). The committees and their chairmen for the current year are:

Membership: G. P. Locker, chairman, Metropolitan Building Co., Seattle.

Greeters & Reception: Sydney C. Evans, Shell Oil Co., Inc., and Kenneth A. Knudson, Everett Pulp & Paper Co., Everett, co-chairmen.

Attendance: H. F. Price, chairman, Bethlehem Steel Co., Seattle.

Past Residents: J. C. Bower, chairman, Webster Brinkley Co., Seattle.

Program: D. P. Brewer, chairman, Trumbull Electric Co., Seattle.

Magazine Advisory: M. C. McClane, chairman, Washington Co-op Egg & Poultry Assn., Seattle.

Publicity: Earl C. White, chairman, Washington Purchasing Agent & Manufacturer, Seattle.

Junior Membership: S. C. Gillespie, chairman, Western Gear Works, Seattle.

Entertainment: J. D. Sullivan, chairman, Crown-Zellerbach Corp., Seattle.

Educational: John S. Robinson, chairman, Todd Seattle Dry Docks, Inc., Seattle.

Noon Luncheon—Plant visit: W. A. Morrison, chairman, Western Blower Co., Seattle.

Budget: Carroll G. Holloway, chairman, Isaacson Iron Works, Seattle.

Community Singing: A. H. d'Evers, chairman, Sunde & d'Evers.

Centralized Purchasing: H. D. Van Eaton, chairman, State of Washington.

Employment: W. O. Dickinson, Grange Co-operative Wholesale, and Watt Fallis, Kenworth Truck Corp., co-chairmen, Seattle.

Picnic: J. H. Nix, chairman, Clark's Better Restaurants, Seattle.

Golf: C. E. Bothwell, chairman, Seattle-Tacoma Shipbuilding Co., Seattle.

Midwinter Party: Ralph H. Sroufe, chairman, Westinghouse Electric Supply Co., Seattle.

Fishing Trip: Harry S. Beetham, chairman, Seattle-Tacoma Shipbuilding Corp., Tacoma, Wash.

Pacific-Northwest Conference: R. Guy Frederick, I. F. Laucks, Inc., and Harry H. Miller, A. J. Goerig Construction Co., co-chairmen, Seattle.

Tacoma Group: Karl L. Bates, chairman, General Hardwood Co., Tacoma, Wash.

General Discussion: William F. Schultz, chairman, Superior Portland Cement, Inc., Seattle, Wash.

* * *

A. J. TAILBY HEADS EASTERN NEW YORK ASSN.

The Purchasing Agents Association of Eastern New York has elected the following officers for 1943-1944:

President, A. J. Tailby, A. P. W. Paper Co., Albany, N. Y.

Vice President, W. D. Macfarlane, The Woodward Co., Albany, N. Y.

Treasurer, S. C. Main, National Commercial Bank and Trust Co., Albany, N. Y.

Secretary, George B. Tod, Schenectady Varnish Co., Schenectady, N. Y.

National Director, Harry Erlicher, General Electric Co., Schenectady, N. Y.

Executive Committee: L. H. Delong, Clark-Witbeck Co., Schenectady; Claude R. Friesner, Albany Corrugated Tool Corp., Cohoes, N. Y., and F. P. Jannott, Simmons Machine Tool Corp., Albany, N. Y.

Heads of the associations thirteen committees are as follows:

Membership, Amos Munson, United Traction Co., Albany, Chairman.

Program, J. Leland Hodgkins, H. B. Kimmey Co., Albany, Chairman.

Attendance, R. S. Walter, A. A. Walter Co., Albany, Chairman.

Publicity, Frank Roos, Consolidated Car Heating Co., Albany, Chairman.

Coal, Thomas Higgins, General Electric Co., Schenectady, N. Y.

Cotton, James Elder, Cluett Peabody & Co., Inc., Troy, N. Y.

Iron & Steel, C. F. Straney, Albany Steel & Iron Supply, Albany, N. Y.

Iron & Steel Scrap, Carl Wenger, Albany Car Wheel Co., Menands, N. Y.; and Willard Jones, Adirondack Foundries & Steel Corp., Watervliet, N. Y.

Non-Ferrous Metals, Harry Erlicher, General Electric Co., Schenectady, N. Y.

Paper, Sidney Jones, Jr., Hudson Valley Paper Co., Albany, N. Y.

Petroleum Products, W. B. Gardner, Socony-Vacuum Oil Co., Albany, N. Y.

Rubber, Conrad P. Spuck, Sager-Spuck Supply Co., Albany, N. Y.

Wool, J. A. McCormack, Albany Felt Co, Albany, N. Y.

* * *

THE GAVELIERS NEW ENGLAND GROUP

The Gaveliers is a New England group composed of past presidents of the New England Purchasing Agents Association, formed recently at a dinner meeting at the University Club, Boston. Harry Graham, secretary of the New England association, is secretary of the Gaveliers. Present at the organization meeting were the following: Chairman W. B. Cummings, New England Confectionery Co., 1939-40; treasurer Sumner R. Keyes, Boston Edison Co., 1931-32; J. L. Ogden, New England Power Association 1912-13; Henry Otte, Boston Clearing House, 1915-16; A. V. Howland, Tileston & Hollingsworth

(Continued on page 164)

WHY THE MAJORITY OF UNIONMELT USERS PREFER

Westinghouse A-C Welders

1 Westinghouse transformer equipment is specially designed for use with the Unionmelt welding head.

2 Control and transformer are combined in the compact 1000-ampere welder.

3 Built-in power-factor correction reduces power demands.

4 Single pre-set current control speeds adjustment—simplifies operation.

5 Natural air cooling eliminates fans.

The Unionmelt Welding Process is the fastest known method of making butt, fillet, and plug welds—up to 20 times faster than any other method. Working together, Unionmelt equipment and Westinghouse A-C Welders form a team that will give you faster continuous production at a new low cost. Write for full details—ask for Booklet B-3090. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pennsylvania. J-90470

* Unionmelt is the registered trade-mark of The Linde Air Products Co.

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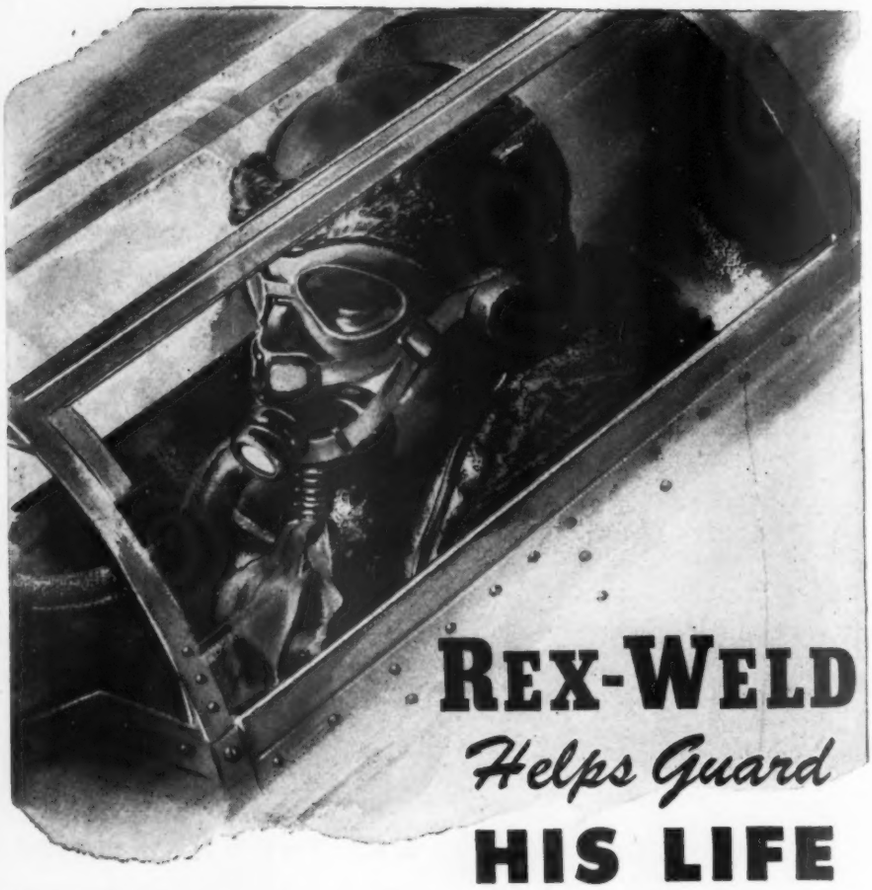

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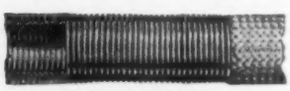
Helps Guard
HIS LIFE

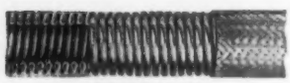
REX-WELD Flexible Metal Hose has met the critical test that demands only the best materials for our combat planes. More and more bombers, fighters and interceptor-pursuit ships are being Rex-Weld equipped.

REX-WELD's war service is not confined to the planes themselves. In the steel mills and munition factories, on the production and assembly lines, everywhere that war-worthy flexible connections are needed, REX-WELD is rendering vital service.

There are specific reasons for this. REX-WELD is a specially constructed flexible metal tubing. It is fabricated from strip metal by a precision autogenous welding process that produces uniform, stronger wall structure plus extreme flexibility. REX-WELD stands up under high pressures, high and low temperatures, extreme contraction and expansion. It is seep-proof to gas, water, oil, air and searching fluids.



Type RW-81
(annular corrugations)



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Available in continuous lengths to 50 ft. Both Steel and Bronze. 3/16" I. D. to 4" I. D. inc. Pressures to 14,500 p.s.i. Temperatures to 1000° F.

Write for Engineering Recommendations

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(Continued from page 163)

Co., 1918-19; Paul R. Brennan, Wetherell Bros. Co., 1924-25; E. E. Brainerd, Monsanto Chemical Co., 1928-29; Richard Stimpson, Loose-Wiles Biscuit Co., 1929-30; Frank A. Gray, Lewis-Shepard Co., 1930-31; William G. Morse, Harvard University, 1932-33; P. E. Bott, Kinney Mfg. Co., 1934-35; F. A. Hayes, American Hide & Leather Co., 1938-39; W. S. Randall, Rust Craft Publishers, Inc., 1940-41; and Robert H. Sibley, W. F. Schrafft & Sons Corp., 1941-42.

SHOW WAR PICTURES AT LOS ANGELES

Following installation of new officers, reports of standing committees, and reports on the National convention in New York by Al Lama and Larry Bleasdale, war films bearing the official title "America in Battle" were shown at the June 10 meeting of the Purchasing Agents Association of Los Angeles. These covered the major battle fronts of the world, showing Yanks vs. Afrika Korps, Russia's Revenge, Raid Over Tokyo, Bismarck Sea, and other battle scenes. The headquarters of the association is now in its new home at 1122 Park Central Building, 412 West 6th St., Los Angeles, Calif.

Charles A. Keeble, P.A., Union Pacific R. R. Co., President of Los Angeles Assn.

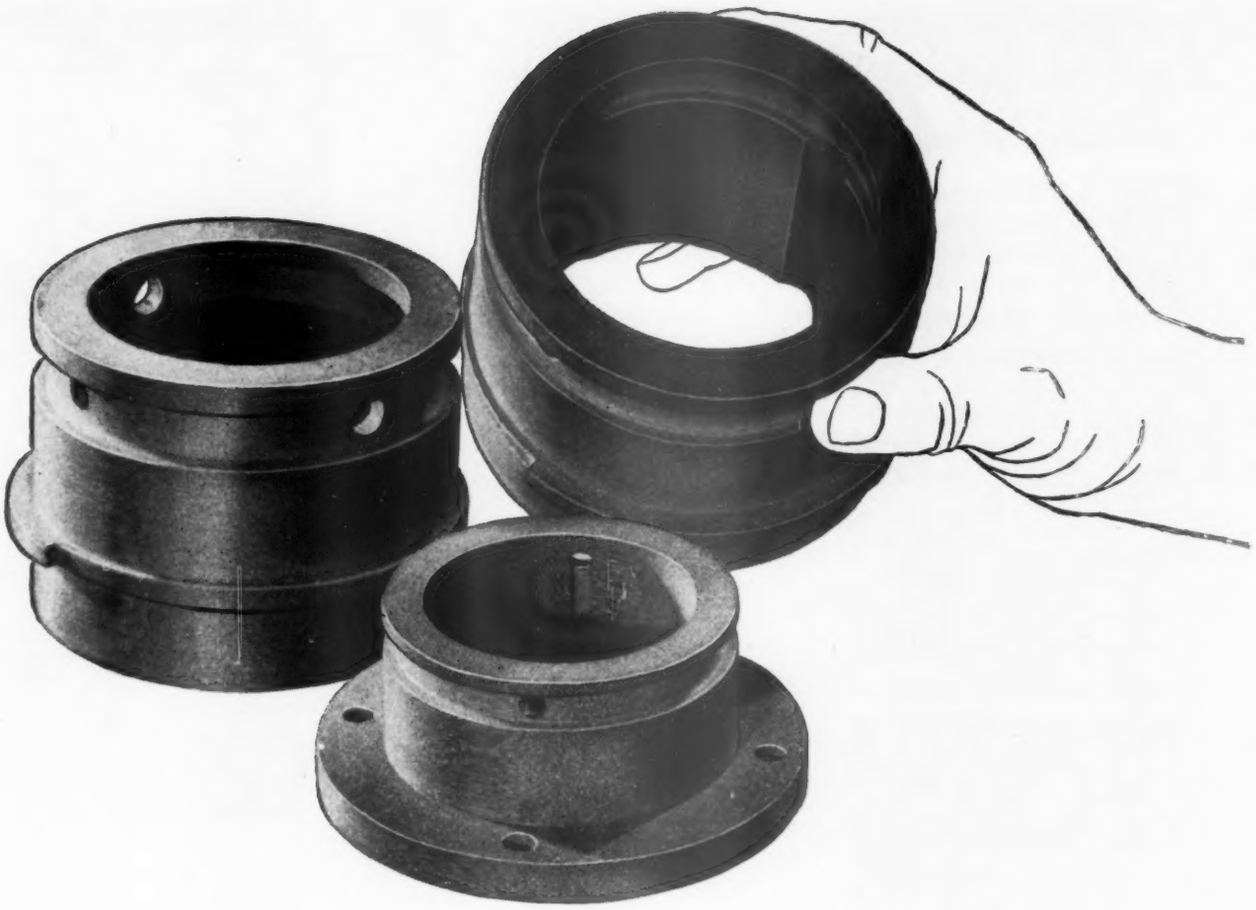
NEW ORLEANS ASSOCIATION HEADED BY P. E. OLIVIER

Paul E. Olivier is the new president of the Purchasing Agents Association of New Orleans. Other new officers are: Fred E. Lind, first vice president; Robert Dowling, second vice president; George E. Gabler, national director; A. G. Lyncker, treasurer; Frank J. Basile, secretary. Theo H. Harvey was named alternate national director. Messrs. Lyncker and Basile will hold office for the 10th consecutive year.

CLYDE PORTER HEADS BIRMINGHAM ASSOCIATION

Clyde H. Porter, Purchasing Agent, Alabama By-Products Corporation is the new president of the Purchasing Agents Association of Birmingham. Other officers elected to serve with him are: First vice president, George L. Wilson, Jefferson County; Second Vice Presi-

(Continued on page 166)



Salt water doesn't freeze BEARINGS OF INSUROK

Cargo ships, escort vessels and submerging submarines, bound for the fighting fronts, face many hazards in addition to those of enemy craft. Pump bearings that have become frozen by electrolytic action, for instance, can cause dangerous delays and require costly, difficult repair.

That is one of the reasons why Laminated INSUROK is being used on many of the centrifugals that pump in ballast for submersion, that circulate water through important cooling systems, or that are just installed as stand-by equipment. In the development of this part, Richardson Plasticians suggested the grade of INSUROK best suited for this particular use—suggested it because of its high strength, wearability and dielectric qualities—recommended it because it has been so successfully used where self-lubricated as well as water, oil or grease lubricated bearings were required.

In meeting the needs of today and in helping to plan for "tomorrow," Richardson Plasticians are continually recommending the grade of Molded or Laminated INSUROK to meet various combinations of specifications. They will be glad to suggest the commercial or special grade to meet *all* the conditions under which your present or plan-stage product will perform. Write for complete information.

INSUROK

Precision Plastics

The RICHARDSON COMPANY

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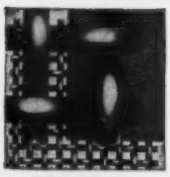

Objective
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600 ROOMS
Each with bath from $3.00 up

RADIO IN EVERY ROOM

Lounge and Restaurants
Unrestricted Parking to 3 a.m.

(Continued from page 164)

dent, B. B. Jones, Southern Steel Works; Treasurer, T. H. Prater, McWane Cast Iron Co.; Secretary; L. M. Quick, Alabama Power Company; National Director, J. W. Sledge, National Cast Iron Pipe Company. The new officers were installed June 3. Retiring Secretary Jones indited the following memorial verse to his successor:

"The secretary stood at the pearly gate
His Face was worn and old
He merely asked the man at the gate
for admission to the fold.
What did you down there, St. Peter asked,
To gain admission here?
Oh, I used to be a secretary
Down there for many a year.
The pearly gates swung wide open sharp
As St. Peter tapped the bell
Come in, Old Top, and take your harp
You have had enough of hell".

At the June 10 meeting, Col. James F. Barnes, district manager of the War Prodution Board, and Clayton Albert, local representative of the Smaller War Plant Corporation were the principal speakers.

H. BUEHLER HEADS FORT WAYNE ASSOCIATION

H. Buehler, Wayne Pump Co., Fort Wayne, Ind., was named president of the Purchasing Agents Association of Fort Wayne. Charles Koons of the Wayne Hardware Co. is vice president, and Harold Berry of the Fruehauf Trailer Corp. is secretary.

C. H. BERRY PRESIDENT OF M. P. A. CLUB

The Metropolitan Purchasers' Assistants Club wound up the 1942-1943 year with an evening of general festivity at the Village Barn, New York, June 8, the only business of the evening being the election of officers. The new president is C. H. Berry, Prudential Insurance Co.; vice president, J. B. Wuehrmann, Worthington Pump & Machinery Corp.; secretary, P. R. Stokes; and, treasurer, K. M. Reed. Past-president W. P. Durland, becomes Chairman of the organization. The next regular business meeting of the association will be held in September.

McCLARIN NOW PRESIDENT OF LEHIGH VALLEY ASSN.

R. T. McClarin, Allentown Paint Manufacturing Co., Allentown Pa., was elected president of the Lehigh Valley Purchasing Agents Association, at its annual meeting. Other new officers are: C. F. Fehnel, Pennsylvania-Dixie Cement Co., Nazareth, Pa.; Secretary, K. W. Shook, Victor Balata and Textile Co., Easton, Pa.; treasurer, E. H. Wieder, C. Y. Schelly and Brother, Allentown, Pa; National Director, G. A. Hildenberger, Bethlehem Steel Co., Bethlehem, Pa.

Directors of the Association are: T. C. Neil, Lehigh Structural Steel, Allentown; H. T. Newhard, Dent Hardware Co., Ful-

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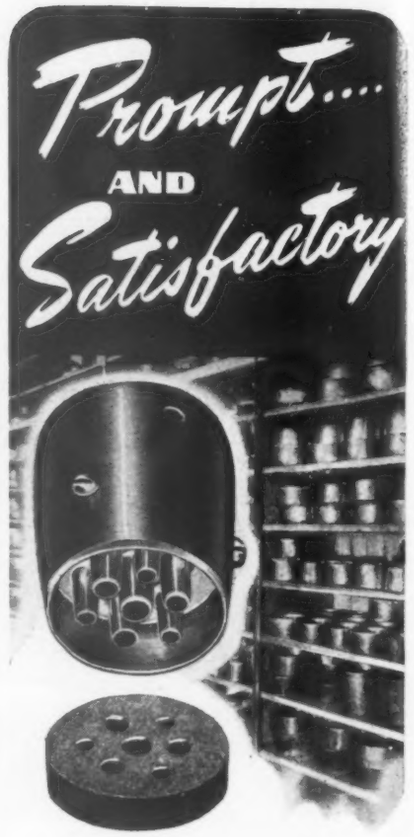

IT IS gratifying to obtain prompt shipment of materials and parts! Even more so, if they exactly suit your purpose. This double achievement is routine occurrence at plants where Booth "prescription" felts — precision die-cut to specifications — are overcoming critical material shortages. Aircraft and other vital war industries thus bypass many a production problem!

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APPLICATION CHART AND SAMPLE KIT . . . Contains swatches of S.A.E. felt types, with specification tables. Write for it. (No sales follow-up.)

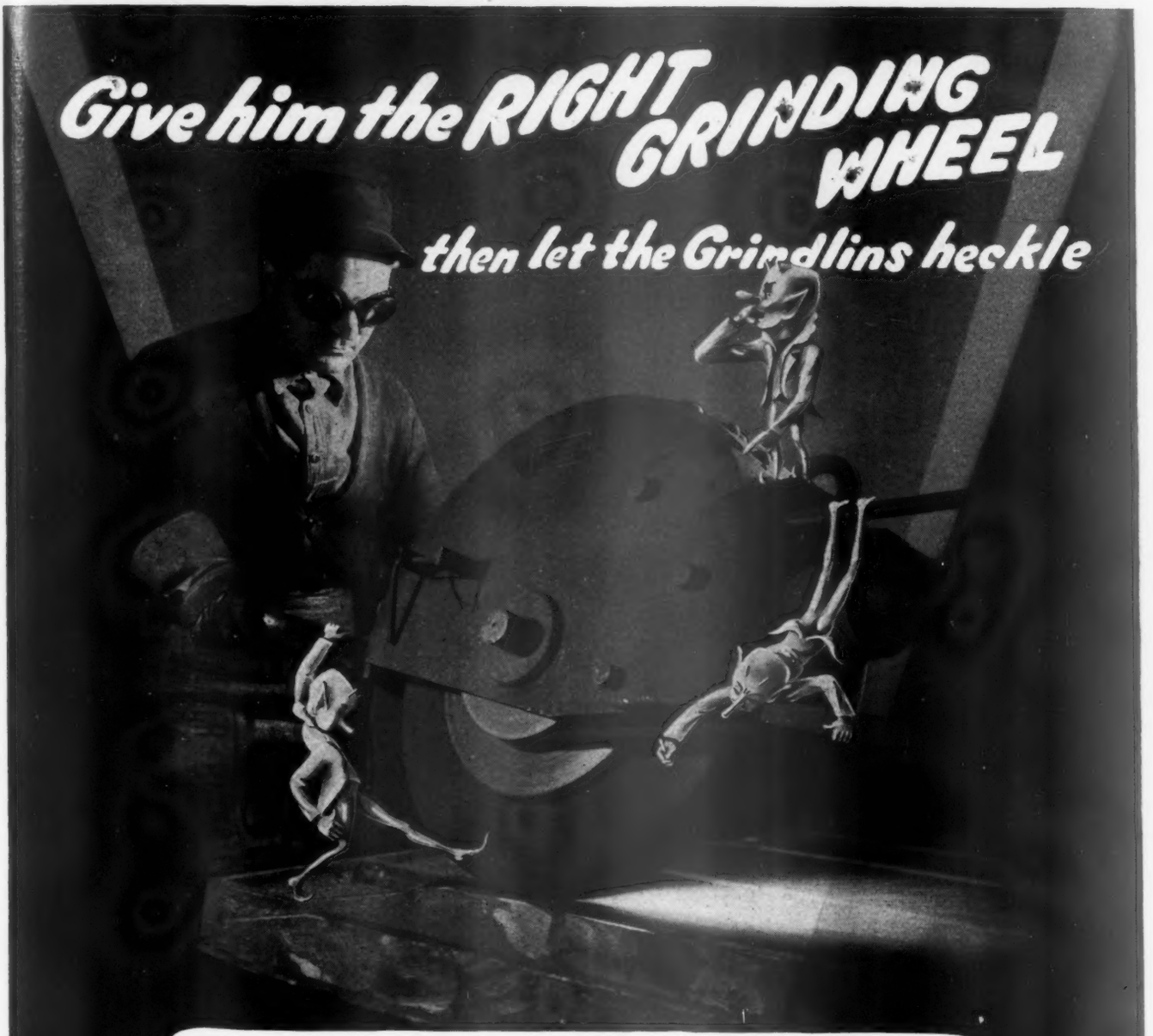
2070

Booth
TRADE MARK

PRECISION CUT FELT PARTS

Give him the RIGHT GRINDING WHEEL

then let the Grindlins heckle



Yes, he's got to have a good weapon in the shop, too.

This combination for example—grinding steel castings, with high speed equipment, a rough and tough sort of a job, calls for a grinding wheel built for heavy duty and high speed.

You'd order for this job a Norton Resinoid bonded wheel, Alundum abrasive; and if without experience with this kind of work, you'd consult a Norton engineer, or a Norton distributor for more specific recommendations.

There is a Norton grinding wheel for every type of grinding. Your shop army must have the right equipment

NORTON COMPANY • **Worcester, Massachusetts**

Behr-Manning, Troy, N. Y. is a Norton Division

NORTON ABRASIVES

(Continued from page 166)

lerton; C. O. Richards, Taylor-Wharton Iron & Steel Co., Easton; W. W. Kellow, General Supply Co., Easton; W. P. Diehl, Bethlehem Foundry & Machine Co., Bethlehem, and G. L. Baumgartner, Aldrich Pump Co., Allentown.

P. L. GEDEON HEADS N.W. PA. ASSN.

P. L. Gedeon, Universal Cyclops Co., Titusville, Pa., was elected president of the Northwestern Pennsylvania Purchasing Agents Association, at the association's annual meeting June 3. Other officers elected are: Vice President, Ned Johnson, Sherwood Refining Co., Warren, Pa.; Treasurer, A. L. Caness, Knox Glass Associates, Oil City, Pa.; C. H. Holden, National Director. Directors for the year are Messrs. Gedeon, Johnson, Caness, and Holden, and A. W. Klinger of the Pennzoil Co., Oil City; E. C. Walters, Kendall Refining Co., Bradford; and Ray Keeney, Clark Brothers Division, Orlean, N. Y.

JOHN S. NETTH HEADS ELMIRA ASSN.

John S. Netth, Hardinge Bros., Inc., Elmira, N. Y., is the new president of the Elmira Purchasing Association. Leon Matson, Corning Glass, Corning, N. Y., is first vice president. L. A. Clark, Troy Engine Co, Troy, N. Y., is second vice president F. R. Baker, American-La France & Foamite Corp., Elmira, N. Y., is treasurer E. A. Ferguson, LeValley, McLeod, Kinkaid Co., Elmira, is secretary and Leon Matson was elected National Director. Directors are V. S. Costello, Trayer Products, Elmira; F. W. Gierspeck, Gierston Tool Co., Elmira; Vince Bates American-LaFrance & Foamite Corp., Elmira, and J. K. Cheney, Ingersoll Rand Co., Painted Post, N. Y.

R. A. GRAVES NEW PRESIDENT OF KANSAS CITY ASSN.

R. A. Graves is the new president of the Purchasing Agents Association of Kansas City, Mo. Other officers are: R. K. Ward and H. J. Hodes, vice presidents; R. C. Hopkins, secretary; G. E. Spencer, treasurer; C. O. Kimball, National Director.

WHITEFORD MADE PRESIDENT OF BALTIMORE ASSOCIATION

Officers of the Baltimore Association of Purchasing Agents for the year 1943-44, are: Lingard I. Whiteford, president; Albert H. Schultz, Jr., vice president; Anthony J. Peroutka, secretary; James J. Jericek, treasurer; and, J. Herbert Gaston, National Director.

C. C. HAWKINS PRESIDENT OF TOLEDO, ASSN.

C. C. Hawkins is the new president of the Purchasing Agents Association of Toledo. I. Ray Darr is first vice president; V. H. Kellermeyer, second vice president; Walter A. Noe, secretary-treasurer; L. C. Warrick, national director. The Board of Directors is made up of J. C. Diehl, Henry Poll, Ray Barber, George Bancroft, J. P. Meyer, and C. E. Kuhlman.

GEORGE H. LILLY PRESIDENT INDIANAPOLIS ASSN.

George H. Lilly of the Lilly Brokerage Co., Indianapolis, Ind., is the new president of the Purchasing Agents Association of Indianapolis. Other new officers are: C. C. Bose, Indiana Bell Telephone Co., vice president; Gerald E. Barnes, Crystal Flash Petroleum Co., treasurer; and, E. F. Brenna, Hugh J. Baker Co., secretary.

GEORGE J. ROONEY PRESIDENT AT GRAND RAPIDS

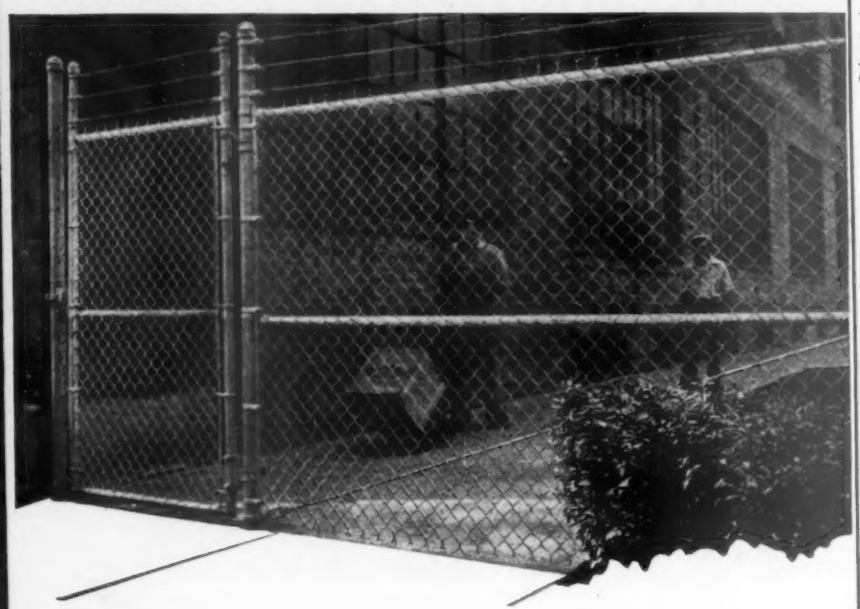
George J. Rooney, Director of Purchases of the American Seating Co., Grand Rapids, Mich., is the new president of the Grand Rapids Association of Purchasing Agents. Other officers elected are: Vice President, Ira W. Jackson; Treasurer, Stanley T. Cook; Secretary, Gardner G. Willard; National Director, Frank W. Clay.

POSTPONE ANNUAL OUTING

At a meeting of the Board of Directors of the Rhode Island Purchasing Agents Association, Providence, R. I., it was voted to postpone the usual annual outing, and to investigate the advisability of conducting a combined outing and the regular business meeting in the month of September, if O. P. A. regulations permit.

PAGE FENCE

America's First Wire Fence — Since 1883



Protect Your Protection

Whatever property your chain link fence encloses, that fence is now "critical material." Because replacement may not be possible for some time to come, you will be wise if you have your present fence inspected now and serviced expertly by Page-trained men. Their long, specialized experience and their knowledge of localized conditions affecting fence metals, qualify them to extend the protective life of your fence. Write for name of Association member nearest you and discuss fence servicing with a factory-trained expert. Address PAGE FENCE ASSOCIATION, Headquarters: Monessen, Pennsylvania.

PRODUCT OF PAGE STEEL & WIRE DIVISION—AMERICAN CHAIN & CABLE COMPANY, INC., BRIDGEPORT, CONN.

"Ask the man who runs one"

★ The time-honored Packard slogan can be applied with real force and significance to the machinery of war. Whether it's a jeep, a tank, a plane, or a battleship, just "ask the man who runs one". From all reports his verdict will be: "It's O.K., Uncle Sam; It's got what it takes!"

In wartime such a testimonial is not for one manufacturer, but for all who had a hand in the achievement. The products of peace wear the bright name plate of a particular manufacturer; in war, the individual must be forgotten. The tank or plane is not a Buick or Chrysler or Ford. It is just a "U.S.A." —a product of a large portion of U.S. industry. The individual's pride of achievement must give place to something greater — the collective pride in masterpieces achieved by all industry working together in an All-American team.

Along with thousands of other manufacturers, James P. Marsh Corporation is on that team. True, the gauges, dial thermometers and other instruments we are furnishing are not shot at enemy positions or dropped on Tojo's palace. But they *are* an essential part of almost anything you can mention for directly or indirectly attaining such objectives.

They have simply a little job in a big war; but you who know Marsh Instruments and heating specialties will agree that there is no equipment more capable of handling the jobs for which it has been chosen.

JAS. P. MARSH CORP., 2054 Southport Avenue, Chicago, Ill.

The Gauge with the "RECALIBRATOR"

A gauge built to Marsh Standards is not likely to be knocked out of adjustment. But if it is, the Marsh "Recalibrator" will quickly restore its accuracy. Simply turn the "Recalibrator" screw until the pointer is at zero when not under pressure. The gauge will then be right at all points on the dial. Unlike other methods of resetting, the "Recalibrator" gets at the root of the error—re-establishes the relation of the bourdon tube to the movement—actually *re-calibrates* the gauge.

MARSH GAUGES

DIAL THERMOMETERS ★ RECORDERS ★ HEATING SPECIALTIES

PARATROOPERS

Take It with Flying Colors

Not every fine soldier is by nature fitted to be a Paratrooper. Such key performers must be painstakingly picked for special aptitudes: coordination, presence of mind, swiftness of action, cool courage, and physical toughness.

Paratroopers must have special uniforms . . . much of their equipment is specially adapted to the enormous demands of their daring assignments. Obviously these super men who drop from the sky have to be hand picked.

So too, Adirondack Bond is "picked for the job" because it's a watermarked 100% sulphite bond paper that can take it to perfection — printed, typed, or written.

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PAPERS FOR PRINTING AND CONVERTING

Do your job, too. Buy More War Bonds

TYPEWRITERS FOR UNCLE SAM

Help Release Typewriters and Help Yourself by Ousting Luxuries from Letters

By LEONARD G. HOLLAND

THE War Production Board's campaign to obtain typewriters from private firms, although bearing fruit, still leaves our Armed Forces far shy of the immense quantity needed urgently to help speed up communications, procurement and transportation. Hence, Uncle Sam is appealing to us all to: "Make 3 typewriters do the work of 4—and sell me the 4th at the OPA price."

One way to help Uncle Sam reach his goal—and also improve your letters and reduce overhead through saving time in typing and dictating—is by adopting modern shortcuts in correspondence. This means, eliminating "non-essentials."

To illustrate, let us see how your stenographer customarily types a letter (except for the body, which we'll consider later):

February 14, 1943
Mr. Edward H. Call, VicePresident,
Jones Manufacturing Co.,
830 Wing St.,
Rochester, Minn.

Dear Sir:

Yours very truly,
J. J. Booth
JJB:TL
John Smith and Company

Now compare the foregoing with this modern version which spares your typewriter exactly 101 blows:

Feb 14 1943

E H Call
Jones Mfg Co
830 Wing St
Rochester Minn

Bt *J. J. Booth*

To repeat, this latter form is recommended chiefly as a wartime expedient with the object to release typewriters for war service. To critics we offer the following defenses for all the suggested revisions:

DATE: Isn't *"Feb 14 1943"* as *understandable* as *"February 14, 1943?"*

ADDRESS AND SALUTATION: Some may regard as quite radical the removal of such old standbys as *"Mr."* and *"Dear Sir,"* to say nothing of the periods and commas. But, after all, what useful purpose do they serve? *That* is the yardstick by which everything we write in wartime should be measured. For years most invoices and statements, headed on business machines, have omitted punctuation and "Mr." or "Mrs.," as unimportant elements. The function of the address is simply to insure delivery to the proper person. Hence, the only significant consideration is that the address be correct.

Titles could well be dispensed with as in the preceding example which omits *"Vice President"*. Most executives insist that they are not offended when addressed without their titles. Many consider the title a not too subtle attempt to flatter or at best a meaningless formality. They aver that, being eager to read the letter itself, they do not even notice how it is addressed. So, as long as mail will reach the addressee without his title, let's ban that appendage, at least for the duration.

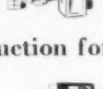
CLOSING: The use of *"Yours very truly"* or any other closing is a pre-Victorian inheritance which has outlived its day and age and which could be eliminated without loss until the need for conserving typewriters is over. Personally, I'm all for "canning" it forever on the ground that it contributes nothing to the letter. Disciples of Emily Post may object that such action would constitute unnecessary rudeness and would violate the rules of etiquette. Well, it is certainly acknowledged that courtesy is a cardinal requisite of a good letter. But it belongs in the body of the letter. If the letter is polite and tactful, no finishing flourish is needed.

COMPANY NAME: The name of the company may also be dropped as it appears on the letterheads. Obviously *"Mr. Booth"* is writing

(Continued on page 172)

COLUMBIA non stick Pencil CARBON PAPERS

Will Not Stick or Smear Regardless of Climate.

The shipping clerk  the production foreman . . . the delivery man — and numerous other individuals, even including, perhaps, the headquarters top-kick in the steaming jungles of Guadalcanal or the frigid fog of the Aleutians . . . all have to "dash off" on-the-spot carbons of pencil-written forms, orders or instructions, that should be proof against sticking and smearing.

In war time and all the time you can depend on Columbia Non Stick Carbon Paper for *quantities* of bright, colorful, clean, easy-to-read copies that won't curl in factory heat or under difficult working conditions. Columbia Non Stick is an unbeatable combination of tough, long wearing paper and moisture-proof ink film . . . a time and work saver which you NEED now! Ask your dealer for a sample — or write or phone the Columbia office nearest you.

COLUMBIA RIBBON & CARBON MANUFACTURING CO., INC.

Main Office & Factory: Glen Cove, L. I., N. Y.

58-64 West 40th Street, New York City
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227 South LaSalle Street, Chicago, Ill.
155 West Congress Street, Detroit, Mich.
227 East Michigan Street, Milwaukee, Wis.
200 Plymouth Building, Minneapolis, Minn.
107 Union Street, Nashville, Tenn.
1508 Fox Building, Philadelphia, Pa.
208 Standard Life Building, Pittsburgh, Pa.
205 East 6th Street, Cincinnati, Ohio
(Harris-Moers Company)

Also: London, England; Sidney, Australia

(Continued from page 171)

on behalf of the company whose letterhead he is using. Thus, chucking out the frills, the only windup required is the signature.

INITIALS: Finally we come to the initials of both dictator and stenographer. Assuming that they would ordinarily be *"JJB:LT"*, you could change them to *"JJBt"*—and if there happens to be no other person in the organization whose surname begins with *"B"* then we could cut further to *"Bt"*. In any event, the colon could certainly be eliminated.

The essence of the foregoing is:

1. There is no room for luxuries in letters during wartime. Those who have their own particular reasons for including refinements of one kind or another can pick up where they left off after the war.

2. Paraphrasing Shakespeare's famous line, *"The play's the thing"*, in letters "the text's the thing". If the text or body of your letter gets across the idea or message you intend to convey, all else matters little.

Now let's turn to the body of the letter. By analyzing your outgoing—and incoming—mail you will most likely discover numerous opportunities to amputate words, sentences and even paragraphs without sacrificing coherence, clarity and courtesy.

For example, compare these three actual inquiries, all received the same day from three different purchasing agents:

Example "A"

"Will you please quote us prices on the following radios?

An early reply will be greatly appreciated."

Example "B"

"Will you please advise if you have any type of electric iron that you could ship us?

"Thanking you, and awaiting your reply, we are"

Example "C"

"Have you any ladies' wrist watches?"

Example "C", wasting no words, will produce as adequate a reply as "A" or "B". Nor will its brevity offend. Nowadays business men expect—in fact, appreciate—short "right-to-the-point" letters.

Incidentally, the closing lines of "A" and "B" are worthy of note, along with the following filched from recent letters received by the writer:

"Thanking you for your prompt attention, we are"

"Assuring you of our desire to be of service at all times, we are"

"Thanking you in advance, we remain"

"Assuring you of our customary careful attention to your requirements, we remain"

These empty flutterings, heritage of a bygone age of exaggerated politeness, can be dumped overboard without loss—in peacetime as well as wartime.

Opening "curtsies", too, may well be banned, not only for the duration, but for all time. See how the following are boiled down to factual introductions:

"This will acknowledge receipt of your order 8916"—

"Thanks for your order 8916".

"We wish to inform you that delivery of your order 8916 has been delayed because . . ."—*"Unfortunately, your order 8916 is delayed because. . . ."*

"We would like to know if you will replace the. . . ."—

"Will you replace the. . . .?"

"Kindly let us know at your earliest convenience"—*"Please inform us"*. (Unless you want information telegraphed, there is no need to request a quick answer. Modern businesses try to give it to you even if you don't ask for it specifically.)

Many other "word-saving" opportunities, too numerous to cite here, exist for those who seek them.

Altogether the combined suggestions herein provide an effective means of "stretching" your typewriter equipment. With the addition of other shortcuts—such as briefer letters and the extended use of processed form letters and post cards—they can help you give our fighting men a lift by enabling you to respond to Uncle Sam's appeal for more typewriters.

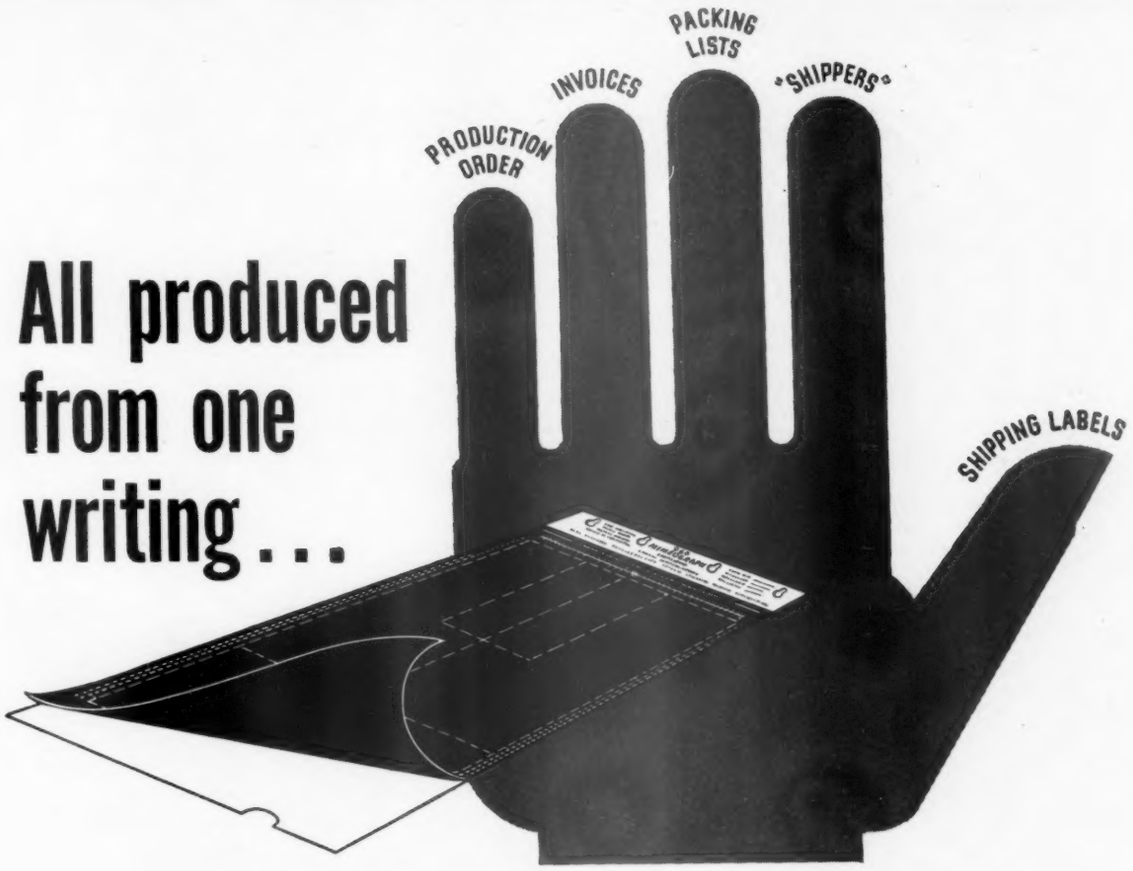
REGISTER MADE OF NON-CRITICAL MATERIALS

Five Ounces of Steel Compared With 17½ Pounds in Prewar Model

Office machinery, an early casualty of the war, was recently revealed to have produced one of its first "war models" made almost completely of non-critical substitute materials, but designed to turn in the same performance as its peacetime metal counterpart.

Nathanial G. Burleigh, Director of the Service Equipment Division, War Produc-

(Continued on page 178)



All produced from one writing...

Find out now how Mimeograph duplication cuts paper work from receipt of order to billing of merchandise

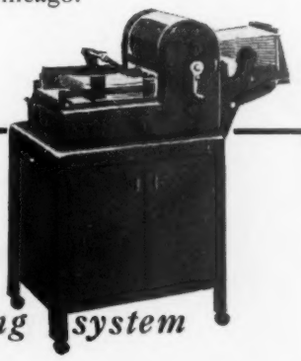
Typical of the way Mimeograph duplication is eliminating paper work bottlenecks in plants all over the country is its solution to the paper work problems in connection with the receipt, manufacture, shipping and billing of various products.

From the receipt of an order to the billing of the merchandise, a single writing on a Mimeograph brand stencil sheet frequently handles all the paper work involved.

- ***The order gets into the factory in minimum time, with copies to every department concerned.***
- ***All the required number of copies of the invoice, packing list, "shipper" —even shipping labels—is produced from the original writing!***
- ***All copies produced stay permanently legible, nonsmudging, in spite of the roughest handling.***

Whether your plant is large, small or medium-sized, Mimeograph duplication can offer a unique solution to these paper work problems.

If you are interested in cutting your plant costs, if you want to save vital man-hours and increase your plant efficiency, write today for complete details. Address, A. B. DICK COMPANY, Chicago.



Mimeograph duplicator

MIMEOGRAPH is the trade-mark of A. B. Dick Company, Chicago, registered in the U. S. Patent Office.

The standard of speed and legibility in the one-writing system

Now...

SPIRIT DUPLICATING IN

BLACK

jet-rite The *CLEAN* Process
... *No Soiling of Hands or Copies*

At long last it's here . . . spirit duplicating in real Black. Old Town's **jet-rite** process is brand new. With it Black copies can be made on any spirit duplicator. ***No change in machine equipment is necessary.*** No longer time is consumed. No greater care is required.

jet-rite brings stepped-up appearance . . . wider versatility. Nothing but Black can give you the legibility . . . the formal appearance that most business forms require. Get the facts about **jet-rite** today. Specimens and prices on request.

Every user of Spirit Duplicating needs **jet-rite**

Registered U. S. Pat. Off.

OLD TOWN
Now offers the jet-rite process for Spirit Duplicating in . . .
BLACK

Any business form of which copies are required, can now be copied in real Black. Invoice – Purchase Order – Price Inquiry – Material Requisition – Payroll Form – Factory Order – Production Record – Inspection Report – Shipping Order – Receiving Report – Assembly Order – Sales Bulletin – Sales Analysis – Instruction Sheet – etc.

Black Hi-test master units and Black Hi-test Dupli-Forms, as well as Black Hi-test spirit carbon are available for the **jet-rite** process. Used with Old Town **jet-rite** duplicating fluid, clear, legible Black copies can be run off on any Spirit Duplicating Machine.

For the ultimate in simplification and convenience, use either master units or printed Dupli-Forms. Here is the perfect matching of carbon and paper, absolutely accurate registration, clean handling and freedom from smudging. Besides the new Black, these exclusive Old Town products are also available in the standard colors.

Old Town is the world's leading producer of carbon papers, ribbons and supplies for Spirit Hectograph Duplicating. The reputation of Old Town products is built on high quality. They are the best money can buy —the result of continual research by experts. *Old Town's facilities are at your disposal. Write for information and samples.*

Old Town

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Foremost Makers of Ribbons and Carbons for Every Use

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ST. LOUIS · DETROIT · NEW ORLEANS · BIRMINGHAM · ATLANTA · WASHINGTON · MINNEAPOLIS

CLEAN..

NO SOILED FINGERS OR PAPER
WITH THE NEW PATENTED

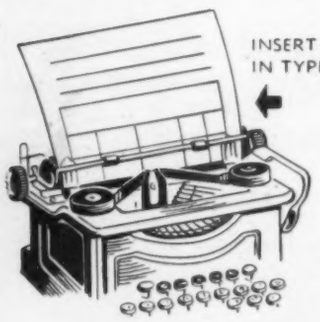
UNI-MASTER

PATENT NO 2,299,014

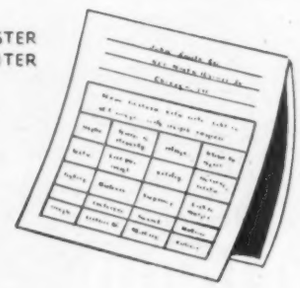
THESE CLEAN, WHITE MARGINS
ON ALL **FOUR** SIDES 1-2-3-4
OF THE CARBON SHEET ARE AN
EXCLUSIVE FEATURE OF THE
NEW V..._ UNI-MASTER
PLAIN AND PRINTED MASTERS

FOR ALL SPIRIT AND GELATIN DUPLICATORS

+SPEED +SAVING +LEGIBILITY



INSERT MASTER
IN TYPEWRITER



FILLED IN OR
PRINTED MASTER
READY TO RUN

AVAILABLE IN COLORS
PURPLE
BLUE
BLACK

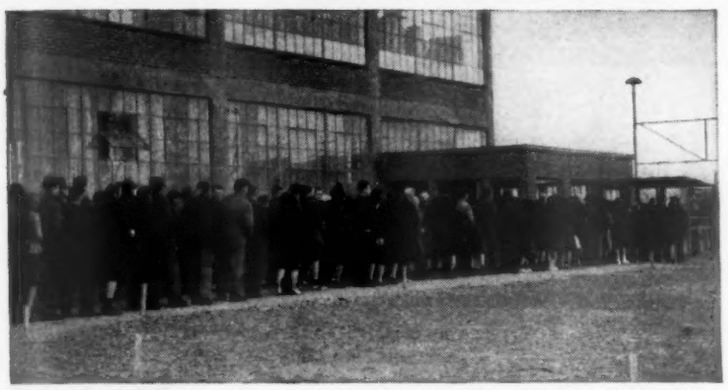
PATENTED AND MANUFACTURED BY

THE MAKERS OF PANAMA-BEAVER CARBON PAPERS AND INKED RIBBONS

"The Line That Can't Be Matched"

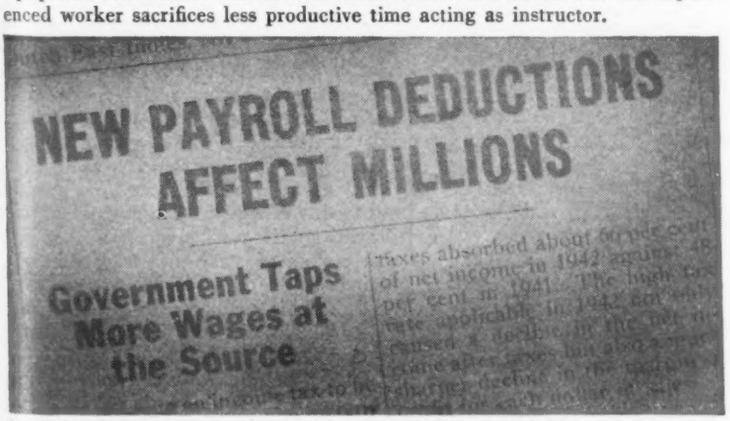
MANIFOLD SUPPLIES COMPANY • • BROOKLYN, NEW YORK

New accounting machines can be purchased in some cases under War Production Board Regulations. Also, in many organizations, we have been able to help solve their accounting problems without the purchase of new equipment. Increased capacity frequently results from mere revision of the system.



Every new man taken on means more work for the Payroll Department. Every instance of overtime means more entries on the payroll records. And every rise in the rate of labor turnover makes the going tougher.

Just when demands upon the Department are heaviest, competent workers leave and are hard to replace. New workers are more easily trained where mechanical equipment has been in use for some time. Which also means that the experienced worker sacrifices less productive time acting as instructor.



1943 is the Payroll Department's toughest year. On top of all its other burdens there's the added work involved in Victory Tax deductions.

A VICTORY

on the Production Front that was won

BEFORE THE WAR!

☆ ☆ ☆

For its tremendous wartime expansion, American industry has had to fight . . . and fight hard.

And in no sector of the home front has the pressure been greater than in the Payroll Department.

It has had many more workers to pay, more deductions to make from every payment, and one problem after another in maintaining an efficient staff.

But wherever there had been peace-time installations of *mechanical* methods, the Department was able to triumph over these wartime conditions.

In thousands of war plants Underwood Elliott Fisher Sundstrand Payroll Machines have enabled accounting procedure to keep pace with mounting production.

Many a company has taken advantage of our knowledge and experience by having us revise its system so as to handle the increased volume.

And large numbers have seen the value of signing up on a yearly basis for the expert care provided by Underwood Maintenance Service. Our Maintenance Service from coast to coast is being kept in complete and efficient operation.

Spare parts, too—we are providing for all your Underwood, Sundstrand and Elliott Fisher machines—as well as a complete line of carbon paper and ribbons, unsurpassed in quality, for every make of office machine. Underwood Elliott Fisher Company, One Park Avenue, New York, New York.

Underwood Elliott Fisher Sundstrand

PAYROLL MACHINES

★ *We are now in war production on—U. S. Carbines Caliber .30M1 — Airplane Instruments — Gun Parts — Ammunition Components—Fuses—Primers and Miscellaneous Items.*

"I'll be D----kgmph!" Cried Winifred the Welder

"Lookie, Patsy, how easy the grit, dirt and fingermarks come off o' this instruction book with just a damp rag!" Yes, that cleanability partly explains the mounting sales of KROYDON COVER for heavy-duty hand books, trainees' manuals, parts catalogs. But Kroydon is also very tough; it holds the staples or threads; folding strength with or against grain comes from extra long fibers in the stock. Its glossy ripple surface both sides makes "work and turn" forms O. K.

And, take it from Winifred or Patsy, Kroydon's hobnailed hardihood takes nothing away from its fine aristocratic *looks.*

Specimens, Samples? Ask your printer or paper man (Kroydon's a national brand), or write us at the mill. *Holyoke Card and Paper Company, Springfield, Massachusetts.*

Eight colors now available (six went to war).
Two weights.
Regular finish mildly ripple.
Special finishes in moderate quantities.

KROYDON COVER

"Tough as a Hippo"

Companion cover lines by "The Cover Paper Mill"

TWILTEX LEATHERCRAFT DURATEX WOODTONE

KROYDON COVER IS *Nationally distributed through these recognized Paper Merchants*

●

Write them for Specimens and Samples

ALBANY
W. H. Smith Paper Corp.
ALLENTOWN
G. A. Rinn Paper Co.
BALTIMORE
B. F. Bond Paper Co.
BIRMINGHAM
Jefferson Paper Co.
BOSTON
Arnold-Roberts Co.
Storrs & Bement Co.
BUFFALO
Alling & Cory Co.
CHICAGO
James White Paper Co.
CINCINNATI
Chatfield Paper Corp.
CLEVELAND
Central Ohio Paper Co.
COLUMBUS
Central Ohio Paper Co.
DALLAS
Southwestern Paper Co.
DAYTON
Central Ohio Paper Co.
DENVER
Carter, Rice & Carpenter Paper Co.
DES MOINES
Pratt Paper Co.
DETROIT
Central Ohio Paper Co.
GRAND RAPIDS
Carpenter Paper Co.
HAMILTON, ONTARIO
United Paper Mills
HARTFORD
Rourke-Eno Paper Co.
HOUSTON
L. S. Bosworth Co.
KALAMAZOO
Bermingham & Prosser Co.
KANSAS CITY
Bermingham & Prosser Co.
LONDON, ONTARIO
United Paper Mills
LOS ANGELES
Zellerbach Paper Co.
MILWAUKEE
Dwight Bros. Paper Co.
MINNEAPOLIS
Wilcox-Mosher-Leffholm Co.
MONTREAL, QUEBEC
McFarlane Sons & Hodgson
NASHVILLE
Clements Paper Co.
NEWARK
Lathrop Paper Co.
NEW HAVEN
Storrs & Bement Co.
Rourke-Eno Paper Co.
NEW YORK CITY
Alling & Cory Co.
Lathrop Paper Co.
Miller & Wright Paper Co.
Milton Paper Co.
Bulkley, Dunton & Co.
OMAHA
Field-Hamilton-Smith Paper Co.
PHILADELPHIA
Thos. W. Price Co.
J. L. N. Smythe
PITTSBURGH
Alling & Cory Co.
PROVIDENCE, R. I.
Storrs & Bement Co.
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Zellerbach Paper Co.
RICHMOND VA.
E. W. Wilson Paper Co.
ROCHESTER
Alling & Cory Co.
ST. LOUIS
Tobey Fine Papers, Inc.
ST. PAUL
Wilcox-Mosher-Leffholm Co.
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Zellerbach Paper Co.
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TORONTO, ONTARIO
United Paper Mills
WASHINGTON, D. C.
Barton, Duer & Koch Paper Co.
WORCESTER
Storrs & Bement Paper Co.

(Continued from page 172)

tion Board, disclosed the new development and cited it as an example of the ability of American engineering design to produce durable and efficiently-operating substitutes for machines whose blueprints have been filed away for the duration.

The first business machine made of nonstrategic materials, an Autographic Register, is being currently introduced by The Standard Register Company, Dayton, Ohio. While relatively simple mechanically, the register, known as a cabinet model, is nevertheless claiming attention as a unique and suggestive example of the possibilities for conversion, especially in the field of office machines. It is constructed of laminated plywood and hard wood working parts, weighing about eight pounds, instead of fifteen pounds or so of steel. The War Production Board authorized the manufacture of a stipulated quantity of these machines for distribution exclusively to War industry, Government

Laminated Plywood and Hardwood Working Parts—Weight 8 Pounds

organizations, and for designated essential civilian requirements.

Glass and plastics were the first substitutes to be tried. But glass was subject to breakage, and plastics were rapidly becoming critical—almost as critical as the materials they were designed to replace.

The only other possibility was wood. After two months of research and study, and with the suggestions and help of the Department of Agriculture's Forest Products Laboratory in Wisconsin, a laminated plywood was hit upon as a substitute which (a) was non-critical and (b) was equal to steel and aluminum in durability and performance.

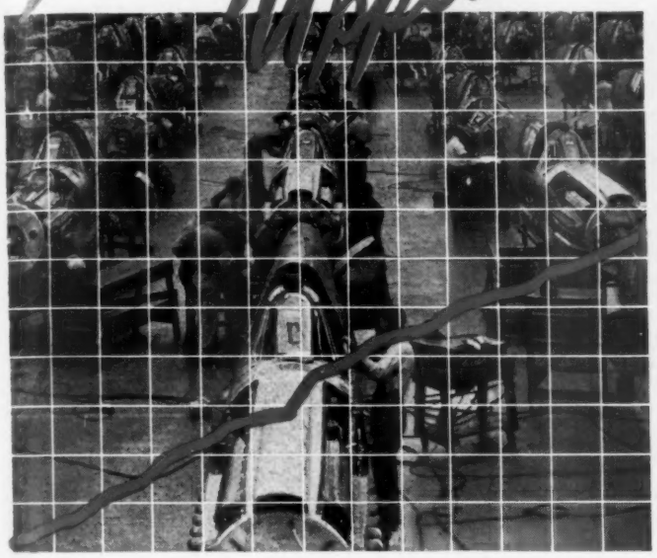
The type of plywood which was decided upon was particularly suitable since it was a kind not needed for airplanes or for other war purposes. By a slow process of hand assembly, the first model was put together.

Finally, a product which was in every detail as good as the peacetime machine resulted. When the specifications were drawn up, it was discovered that only five ounces of steel—for such things as springs and joining hardware — were needed. This compared to an average of 17½ pounds of sheet steel used in the prewar model.

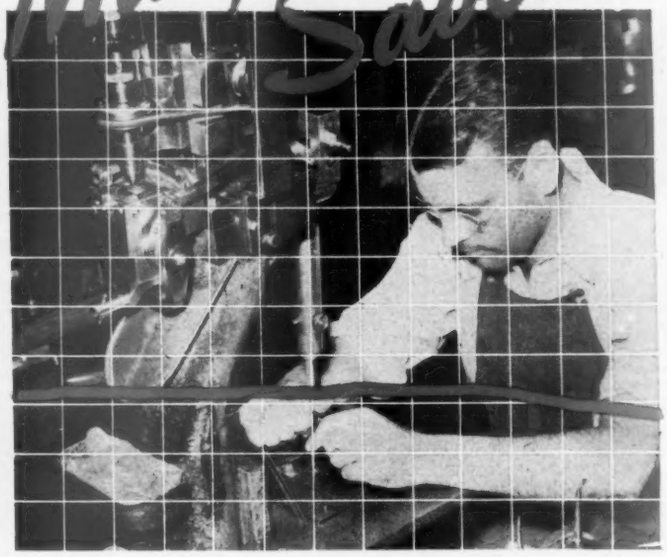
Shaped and molded under pressure and heat, this register possesses a desirable combination of lightness and strength.

(Continued on page 180)

Production Upped!



Manpower Saved!



KARDEX ADMINISTRATIVE PRODUCTION CONTROL ASSURES GREATER UTILIZATION OF PRESENT FACILITIES

● There is a proven, positive way to get more out of your available manpower, more out of the same machines. And it's being done by the engineered planning of materials, methods, men and machines.

In countless plants and offices Kardex *visible* record control systems are helping management to analyze its manufacturing problems, helping it to plan and coordinate its tools of production.

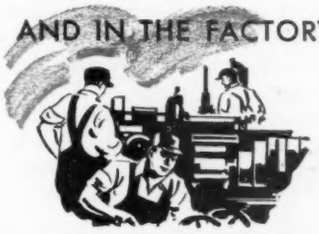
But planning for productivity is only part of the job. You need efficient "follow through." Kardex administrative control meets and answers the problem by *signalling* quickly threatened shortages of materials and tools, by *spotlighting* for the wartime executive a summary of daily operations, by *simplifying* production facts for instant recognition.

NET RESULT: *Maximum Utilization of Available Manpower and Facilities.*

We'd like to tell you more about the "fact-power" of Kardex—how it's plugging up manpower holes and accelerating plant productivity with better administrative control for thousands of manufacturers. Write us in Buffalo 3, N. Y. or phone your nearest Remington Rand Systems office.

IN THE OFFICE

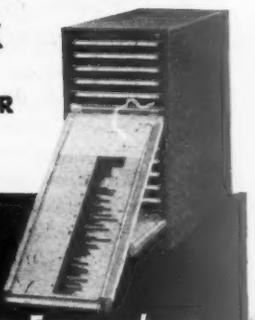
AND IN THE FACTORY



KARDEX FOR EVERY PRODUCTION CONTROL PROBLEM

Material or Inventory Control • Machine Load Control • Tool Control • Personnel Training and Administration • Procurement Control • Property Control • Planning Records • Scheduling Control • Progress Control

KARDEX SAVES MANPOWER



SYSTEMS DIVISION

REMINGTON RAND

BUFFALO 3, NEW YORK

Branches Everywhere

6 TESTED TIMESAVERS
for Understaffed Offices

Desk a "JUNK HEAP"?

Desk so piled with details this morning you didn't know where to start? Then get Hammermill's "Recipe for an Orderly Desk." Written by William Feather, this book will help you organize your day's work by showing you helpful times to put things in writing. Reminds you what to do and when, simplifies routing of information, eliminates interruptions, gets rid of details. Free. √ Check No. **1**

TO HELP YOU ANSWER TODAY'S MAIL TODAY

Unanswered letters irritate customers, delay decisions, upset office routine. If your desk is cluttered with mail demanding an answer, Hammermill's little book, "Very Promptly Yours," will help you get out from under the load. In this book, by Robert E. Ramsay, is a tested plan for speeding up correspondence, routing important letters, organizing files to handle more work faster. Free. √ Check No. **2**

New Manual of Wartime Paper Information

Pocket-size, 24-page, conveniently indexed book of the Hammermill papers available under wartime paper-manufacturing restrictions. This Manual is an invaluable time-saver. It tells what grades, what colors, what finishes, what weights, what sizes you can get now. Free. √ Check No. **3**

SALESMEN STALLED By Gas Rationing?

Stepping up direct mail, to offset manpower shortages, to help hold markets and create post-war desires? Then you'll want Hammermill's kit, "7 Timely Ways to Personalize a Company Letterhead." Shows how to replace missing personal contacts. Add the warmth of a handshake to letters—make your customers realize you are still close to them—remind them you'd call in person if you could. Free. √ Check No. **4**

A COLLECTION OF COLORFUL DISPLAY PRINTING

Do you have to get out posters, window pieces, mailing folders? Then see this collection of specimens on Hammermill Offset, printed on different weights, finishes, and in two, three and four colors. Free. √ Check No. **5**

Need Lighter Weight Papers in Your Printed Pieces?

There is a light weight paper without objectionable show-through. It is Hammermill Opaque. See kit of specimens — illustrated letters, folders, bulletins, catalogs. Free. √ Check No. **6**

Hammermill Paper Company, Erie, Pa.
Please send me, free, the business timesavers checked:

1 ☐ 2 ☐ 3 ☐
4 ☐ 5 ☐ 6 ☐

Name .....
Position .....
(Please attach to your *company* letterhead)
PUR-JUL

PAPER AND PRINTING MULTIPLY MANPOWER—AND MANPOWER WILL WIN THE WAR!

(Continued from page 178)

Weight for weight, the cabinet material is said to have three times the strength of steel. Its natural walnut finish contributes a pleasing style element. Binding materials and finish are moisture-proof; working parts do not build up static electricity, nor does the cabinet spark if struck. Thus, the non-metal register has special advantages for use in many industrial situations, for example, Ordnance Plants and Chemical laboratories—wherever highly inflammable materials are handled.

One of the most notable uses of the register, currently, is in connection with the visitor control systems at War plants, vital Government installations, power plants, and communication centers. The writing of sets of forms providing a pass and an exact, permanent record of visitors is a familiar procedure at reception desks, gates and at entrances to restricted areas within plants.

WILLIAM F. MOHAN

William Francis Mohan, director and first vice president of Scott Paper Company, Chester, Pa. and one of America's outstanding sales executives died suddenly Saturday, June 5 at his home in Broomall, Pa. He was in his 52nd year. His death comes as a shock to many of his friends and associates.

He was known, not only in his own organization as a leader of great ability, but in national business circles, as well. For many years, Mr. Mohan has had close

The late Wm. F. Mohan, First Vice President, Scott Paper Co.

contact with most of the executives in the national food field where he was recognized for his aggressive leadership and sound knowledge of distribution problems. He served as first vice president of the Grocery Manufacturers of America, and was, at the time of his death, director of that organization.

Mr. Mohan entered the employ of Scott Paper Company in 1914 as a salesman in Boston, became Boston district manager in 1920 and in 1922 moved to Philadelphia as the first divisional sales manager to be appointed by the company. From Philadelphia, Mr. Mohan moved to Chicago in 1924 as retail divisional sales manager covering the entire West. In March, 1926 he moved to the Chester Headquarters of the Company as manager of retail sales. Two years later, he became general sales manager and was elected to the board of

(Continued on page 182)

Born of Parker's wartime research—

A new black ink that's perfect for every use!

Writes black — dries black ... cleans pens as it writes

AT LAST—the perfect black ink! Out of Parker's laboratories has come a remarkable new ink that writes black and *won't change color*. It's called "Micro-film Black" Quink.

Unlike many so-called black inks, "Micro-film Black" Quink never gums or clogs pens with heavy carbon. For this magic ink contains a secret ingredient, *solv-x*, which actually cleans pens as it writes.

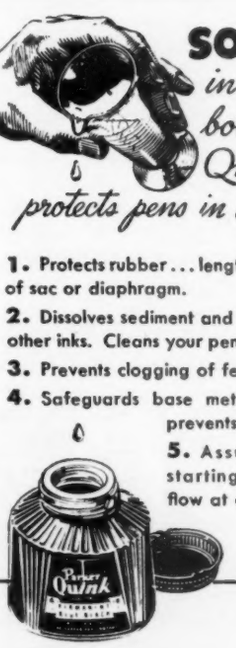
"Micro-film Black" Quink is truly an all-purpose ink. It is ideal for all correspondence, for records and checks. Intensely black, it photographs perfectly, making it excellent for such processes as Recordak.

Next time you order ink, specify "Micro-film Black" Quink. It prevents pen breakdown, saves you money. The Parker Pen Company, Janesville, Wisconsin and Toronto, Canada.

Especially economical in pints, quarts and gallons.

SOLV-X *in every bottle of Quink... protects pens in 5 ways!*

1. Protects rubber ... lengthens the life of sac or diaphragm.
2. Dissolves sediment and gum left by other inks. Cleans your pen as it writes.
3. Prevents clogging of feed.
4. Safeguards base metal parts ... prevents corrosion.
5. Assures quick starting and even flow at all times.



PARKER "MICRO-FILM BLACK" QUINK

THE ONLY INK CONTAINING PEN-PROTECTING SOLV-X

IS REFLECTED IN
The World's Finest Staplers

Ace has always built just one kind of stapling equipment—*the best.* Users are well aware of this fact. Into every machine Ace builds is incorporated the same skill and infinite, watch-like precision engineering that has made Ace Staplers preferred the world over. This same uncompromising policy has been adhered to religiously in the development of Ace's new wartime Model No. 402-V.

This machine conforms, in every detail, to the high standards maintained by Ace since the first Ace Stapler was produced years ago. In the new model, which in size, shape and construction, is built along the lines of our Model No. 402, steel is used wherever strength and precision are required. This insures smooth, easy, efficient operation and lifetime satisfaction. Model No. 402-V is a machine any one may be proud to own. Shipments will be allocated to those qualifying with proper priority ratings.

SOLD THROUGH DEALERS EXCLUSIVELY

ACE FASTENER CORPORATION
3415 North Ashland Ave., Chicago, Ill.

ACE The WORLD'S FINEST
Stapling Machines
FOR EVERY PURSE AND PURPOSE

(Continued from page 180)

directors. In the Spring of 1934, Mr. Mohan was appointed vice president in charge of sales and in 1939 he became first vice president.

For eighteen months, Mr. Mohan was the active managing executive of the business in the absence of Thomas B. McCabe, president, who was in Washington.

He is survived by his wife, Mrs. Lillian B. Mohan, and two daughters, Mrs. Frank Kennedy of New York and Mrs. Charles M. Turville, Drexel Hill, Pa.

ALDINE PAPER CO. BUYS REINHOLD COMPANY

Harry E. Gould, president of the Aldine Paper Co., New York, has purchased the Reinhold Card and Paper Company. The two paper companies will be conducted independent of each other. The Aldine Paper Co. will continue in the handling of special papers, and a new firm, Reinhold-Gould, Inc., will handle mill brand papers for the printing and allied industries.

PAPER UNDER WARTIME CONDITIONS

A special bulletin giving answers to specific questions on the paper situation, has been issued by the Strathmore Paper Co., West Springfield, Mass. Paper is tight, explains the bulletin, because orders exceed the capacity of mills to fill the demand. For example, during the first 14 weeks of 1943 mills making rag content papers received orders totalling 135% of normal rated capacity. Production was 120%—so mills got further behind each succeeding week.

"How much of this paper goes to the Government?" For this 14 week period, Government orders for rag content papers amounted to 55% of normal as compared to 10% in peacetimes. Deduct this 55% from 120% production, and 65% is left for commercial use. How does this compare with normal years? In peacetime, mills average about 85% and 10% goes to Government, leaving 75% for commercial use. So the paper available for general use in normal years is 75% as compared to 65% so far this year. But—the 55% for Government does not include paper for war industries. New plants and expanded plants consume large amounts of paper taken from the 65% available for commercial use and making the total left still smaller. These are the background facts and figures as to why paper is tight.

Though it has been the practice to maintain heavy inventories of paper, when orders started running 135% of normal, orders were filled from stock with the result that inventories have become depleted, and orders are so heavy today that there is little or no manufacturing time to re-build mill stocks.

"What about the future for paper?" The fact is, says the bulletin, no one really knows. Possibly Government orders may be at or near their peak; pulp may get tighter; manpower may get shorter; production may again be cur-

(Continued on page 184)

HE'S
"THAT WAY"
OVER HILL BUSINESS CARDS

Here's a purchasing agent who's in love with his job! And you would be too after doing business the R. O. H. Hill way . . . it's easier, cuts out extra expense, and saves plenty of headaches!

You make no investment in master stock, need no inventory records—you pay-as-you-go, yet get a wholesale price. And it's quick service, too. One-color orders go out the same day they reach our plant . . . *direct to the user* to eliminate double handling. The cards are packed in our Special 25-card Economy Cases to keep them clean and cut waste from dog-earred throw-aways.

Send us your approximate yearly quantities of business cards and letterheads with a sample of each—we'll send estimates and suggestions for their improvement at no obligation.

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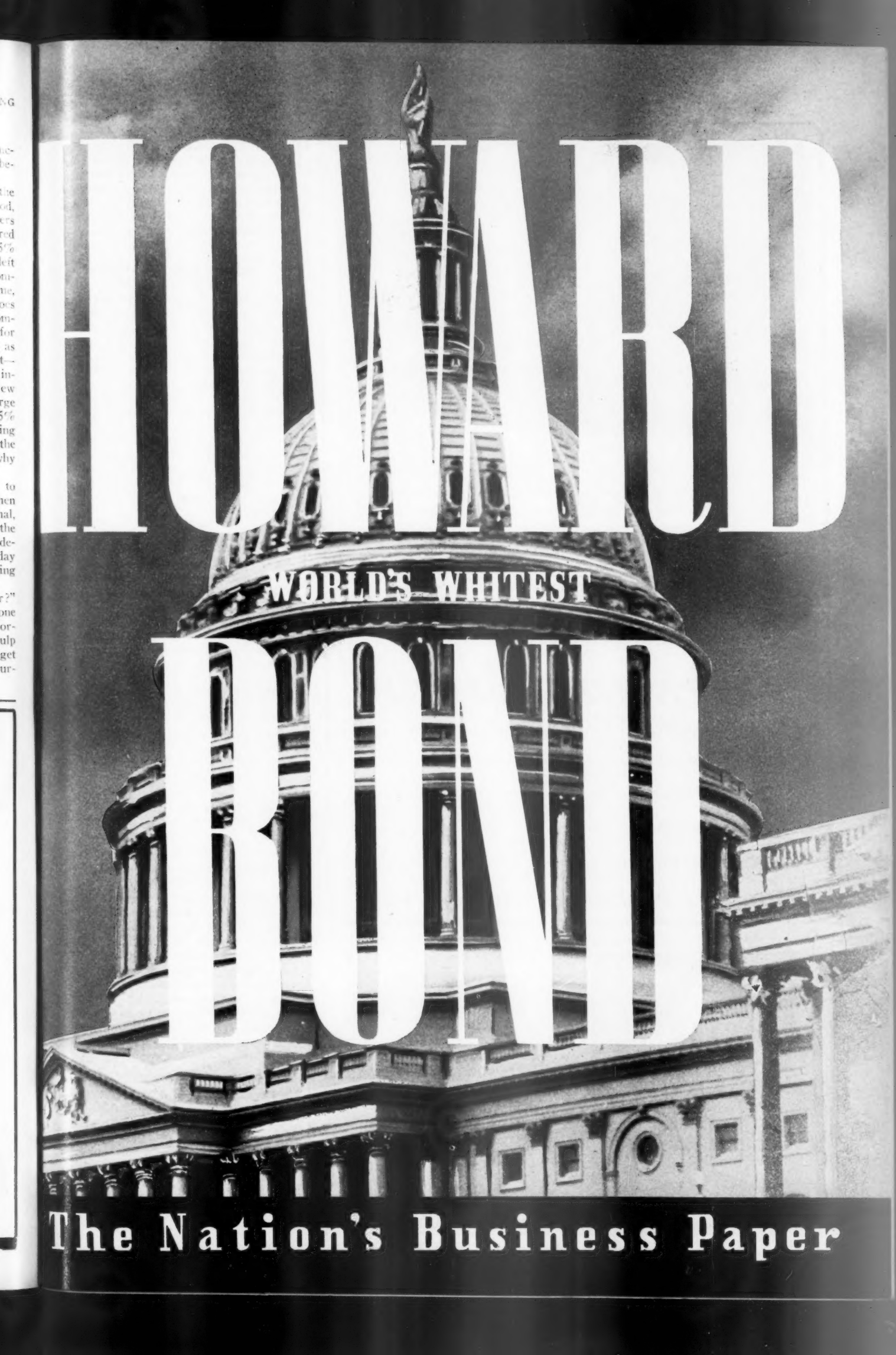
INCORPORATED
270 Lafayette Street, New York 12, N. Y. Tel. CAnal 6-6340
Makers of Fine Business Cards and Letterheads Since 1914
Engraved or Thermographed


HOWARD
WORLD'S WHITEST
BOND
The Nation's Business Paper

The general manager is stalled in a strategic production sector. Records, reports, requisitions are piled high on his desk. Somewhere the "paper work" of his army of clerks has failed.

For modern business Parsons makes papers with a special "no-glare" surface, that have consistently proved their ability to increase the efficiency of clerical and technical workers.

Today, have your Printer or Lithographer submit samples and prices of *Parsons-Papers* for your business needs. You will be amazed at how little these papers cost and how much they can help increase the output of your staff.

Parsons Paper

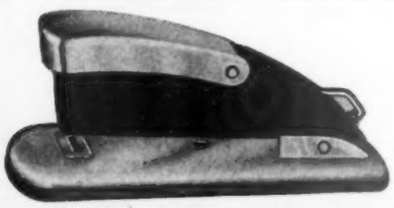
Specialized for Modern Business

BOND PAPERS	*For correspondence, documents and forms of every description*
LEDGER PAPERS	*For accounting systems, records, certificates and other permanent needs*
INDEX BRISTOLS	*For machine accounting, index record cards and general uses*
TECHNICAL PAPERS	*Made to your specifications for all types of special requirements*

PARSONS PAPER COMPANY • HOLYOKE, MASS.

STAR STAPLERS

The best way to fasten papers. Needed on every desk. Use economical standard size staples. Built to last. Guaranteed against defects.



STAPLERS STILL AVAILABLE
On Priority Orders.

Essential industries needing paper FASTENERS and TACKERS can still be supplied.
Model S 122A shown above lists for only $1.90.

Write for catalog

STAR PAPER FASTENER CO., NORWALK, CONN. Dept. P

(Continued from page 182)

tailed. There may not be enough paper to satisfy the full requirements of everyone. But, with more care in the use of paper and the practice of some economy, there will probably be enough to take care of the more essential requirements of each paper consumer.

HINDE & DAUCH APPOINTS COLOR CONSULTANT

As part of a post-war planning program to develop corrugated shipping boxes and packages, the Hinde & Dauch Paper Co., Sandusky, Ohio, has retained Arthur S. Allen, New York, N. Y., widely known Munsell System Colorist, as Color Consultant.

President of All Color Co., Inc., New York, Mr. Allen is a recognized authority on the use of color. He is an expert in the use of the Munsell System, the only system calibrated both in terms of spectrophotometric measurement and in terms of the system of color mixture adopted by the International Commission of Illumination.

USP XII SUPPLEMENT

The first bound supplement of the USP XII will be available during July, it was announced recently. Owners of all copies of USP XII are invited to fill in and mail the post card order which is fixed inside the back cover of the book in order to receive the supplements.

BROWN PAPER CO. ANNOUNCES NEW DISTRIBUTORS

The L. L. Brown Paper Co., Adams, Mass., announce the appointment of J. Francis Hock & Co., Baltimore, Md., as distributor of Escort bond, a 50% white rag paper. Also, appointment of the Standard Paper Co., Milwaukee, Wis., as distributor of the company's Greylock Ledger and Escord Ledger and Machine Posting.

UNITED WALL PAPER OPENS SIXTH WAR PLANT

Opening of the sixth plant, devoted exclusively to War Production, located at Long Valley, N. J., is announced by the United Wallpaper Factories, Inc., Chicago. Within six weeks after Pearl Harbor the company converted a warehouse to an incendiary bomb plant, and in the ensuing 15 months converted or constructed four other plants now engaged in manufacturing incendiary bombs, parachute flares, tank parts, Naval equipment, and other material.

PAPER CONTAINERS FOR CHEMICALS

The possibility of expanding the use of paper for packing various chemicals looms on the horizon, as a result of a recent meeting of the Paper Shipping Sack Industry Advisory Committee and WPB.

It was pointed out that paper shipping sacks can be used satisfactorily for many chemicals that have been packaged in metal or fiber drums.

RATIONING UNDER SALE OR CLOSING OF INSTITUTION

The Office of Price Administration today established the procedure to be followed under rationing in cases involving the transfer or liquidation of "institutional user establishments."

Amendment 24 to General Ration Order 5 states in specific terms what an institutional user must do in the event that he sells his establishment or closes his business.

The order applies to all three groups of institutional users—small boarding houses and similar Group I establishments; prisons, insane asylums and similar institutions of involuntary confinement in Group II, and hotels, restaurants, clubs and commercial eating places in Group III.

The amendment became effective June 7.

TWO NEW ASSOCIATIONS ACCEPTED BY NATIONAL

Two new local associations have been approved for membership in the National Association of Purchasing Agents, by the executive committee.

The Purchasing Agents Association of the Texas Panhandle, Amarillo, Texas. T. R. Cross, Paramount Supply Co., 108 Taylor Street, Amarillo, secretary. And, the Windsor, Ontario association which will be known as the Purchasing Agents Association of the Essex-Kent District of Ontario. Its secretary is Elmer Mulvenna, Standard Paint & Varnish Co., Ltd., Windsor, Ont.

GEORGE C. KRATZER PRESIDENT OF BUFFALO ASSOCIATION

George C. Kratzer, purchasing agent of the Houde Engineering Division of the Houdaille-Hershey Corporation, was elected president of the Purchasing Agents' Association of Buffalo at its June 9 meeting. He succeeds Raymond F. Holland. Other officers elected are: First vice president, George B. Michie; second vice president, Carl Zierk; secretary-treasurer, Albert E. Chipman, and directors, Thomas R. Beecher, Henry V. Wodtke and Harry H. Scheu.

MILWAUKEE ASSOCIATION HOLDS ANNUAL MEETING

The Milwaukee Association of Purchasing Agents held its annual meeting at North Hills Country Club on June 25, at which the following officers were elected for the 1943-44 term.

President, L. M. Sanford, Motor Castings Co.

Vice President, R. W. Brick, Carnation Co.

Secretary, L. C. Stilp, Kimberly Clark Corp.

Treasurer, E. L. Block, Unit Drop Forge Corp.

National Director, J. E. Barron, Rate Oil Co.

Local Directors: Walter H. Wenzel,

(Continued on page 186)

BYRON WESTON CO. LINEN RECORD, EXTRA NO. 1 100%

Time, dampness, careless or excessive handling may menace the life of your vital business records.

Weston's papers have precisely adjusted qualities that resist time, use and abuse . . . qualities developed through generations devoted to the exclusive manufacture of cotton-fibre-content papers worthy of responsibility.

Your supplier knows Weston's papers and can show you which to use for each specific purpose.

Any record worth keeping is worth keeping on a WESTON paper.

BYRON WESTON COMPANY
Makers of High Grade Papers
DALTON, MASSACHUSETTS

WESTON'S PAPERS

WESTON PAPERS PROTECT YOUR RECORDS

DEFIANCE INDEX 100% WINCHESTER INDEX 50% WESTON'S BOND EXTRA NO. 1 100% DEFIANCE BOND 100% HOLMESDALE BOND 75% WINCHESTER BOND 50% BLACKSTONE BOND 25%

DEFIANCE LEDGER 100% WAVERLY LEDGER 75% CENTENNIAL LEDGER 75% WINCHESTER LEDGER 50% BLACKSTONE LEDGER 25% WESTON'S MACHINE POSTING LEDGER AND INDEX 50%

EVERY WESTON PAPER IS A COTTON FIBRE CONTENT PAPER

(Continued from page 185)

Vilter Mfg. Co.; Walter E. Radke, A. Geo. Schulz Co; E. L Janke, Jos. T. Ryerson & Sons Co.; and J. E. Hamilton, Dumore Company.

Seven membership applications were acted upon, one of which was a transfer. The meeting was preceded by a golf tournament.

WM. E. ARNSTEIN TALKS ON CMP AT SYRACUSE

Several hundred Purchasing Agents, industrialists, buyers and priority men listened to W. E. Arnstein, Regional CMP Specialist of the War Production Board, New York, explain "How to Operate During the Third Quarter". Mr. Arnstein analyzed CMP and MRO regulations and changes especially as they affect third quarter operation.

58% OF SMALL MANUFACTURERS ENGAGED IN WAR PRODUCTION

A representative sample survey of the nation's small manufacturing concerns, published by the Office of War Information, indicates that 58 per cent are engaged directly or indirectly in war production. Of the remaining 42 per cent, about one-quarter have been unable to get war production contracts and about three-quarters have not tried to get war contracts because their products were not required for war, because they had enough civilian business or for other reasons.

Only concerns employing no more than 125 wage earners were included in the survey; actually, less than 5 per cent of the firms studied employed more than 80 workers.

HOW TO SHIP BY AIR EXPRESS

"How to Ship by Air Express During Wartime" is the name of an indexed handbook on the who, what, where, when and how of air shipping—the procuring of priorities, list of districts and a regional priority offices, addresses and phone numbers of regional offices; packing, weights and sizes, approximate flying time and rates. Copies may be procured from Railway Express Agency, 230 Park Avenue, New York.

CLOSE 23 WPB DISTRICT OFFICES

Twenty-three of WPB's 123 district offices were closed June 15, according to Wade T. Childress, Deputy Vice Chairman for Field Operations.

Besides effecting a saving in money, the cut will result in the maximum utilization of WPB personnel. Business formerly carried on by the twenty-three offices will now be handled by other district offices in the states involved, and essential service to the communities will thus be maintained.

These are the twenty-three offices affected:

Lowell, Mass., Fall River, Mass., New Bedford, Mass., Camden, N. J., Chester, Pa., Lancaster, Pa., Norristown, Pa., York, Pa., Wilkes-Barre, Pa., Reading, Pa., Roanoke, Va., Williamsport, Pa., Chattanooga, Tenn., Greenville, S. C., Mobile, Ala., Miami, Fla., Johnstown, Pa., Wheeling, W. Va., Iron Mountain, Mich., Fort Smith, Ark., Shreveport, La., Fresno, Cal., Oakland, Cal.

RUSSELL C. WENZ HEADS UTILITY INVENTORY CONTROL, OFFICE OF W. P. B.

Russell C. Wenz, Assistant General Purchasing Agent of the Philadelphia Company and Subsidiary Companies (Public Utility System in Pittsburgh) has been appointed Regional Utility Engineer heading up the Regional Utility Inventory Control Office of the War Production Board, with headquarters in the First National Bank Building, Pittsburgh, Penna.

Originally a volunteer organization formed by utilities companies, the Regional Utility Inventory Control Office was considered necessary in establishing contact between industrials, utilities, and war agencies. In order to increase its

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Ask the first KOH-I-NOOR user you meet, and then ask a hundred more, and you will get the same unfailing answer, "KOH-I-NOOR can be relied upon to give you definite protection from all lead pencil troubles."

Throughout the fifty-odd years the KOH-I-NOOR pencil has been on the market, we have, through constant research, painstaking effort and strict adherence to material specifications, supplied critical users with a drawing instrument of superlative quality.

SAVE DON'T WASTE PENCILS

Rely upon KOH-I-NOOR

#1700 TECHNICRAYON PENCILS with small diameter lead, slightly soluble in water, are manufactured in 40 colors.

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Since 1912 we have been direct importers of fine diamonds. Our values are outstanding. Selections sent for inspection without obligation.

L. & C. MAYERS CO.
ESTABLISHED 1912
Importers of Diamonds and Watches
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545 FIFTH AVENUE
NEW YORK

operations, the WPB embraced the organization as a part of its own functions. Twelve similar inventory control offices are located in other sections of the country.

The principal purpose of this inventory control office, Mr. Wenz explained, is to put a buyer in contact with a seller who has on hand a surplus of materials and equipment "frozen" under wartime restrictions.

In establishing direct and rapid contact between the two parties, he pointed out, weeks and months of time can be saved. Larger industrials do not have to interrupt schedules in war plants from which they request the needed equipment, and a buyer can secure a piece of equipment ready for installation, perhaps saving him months of waiting on a priorities list, Mr. Wenz stated.

As an example of how the Utility Inventory Control Office works in a specific case, Mr. Wenz showed what happens when an industrial needs a piece of utility equipment. The industrial contacts the Utility Inventory Control Office, describes its needs. The office goes through the inventories of surplus stocks of other companies in its files, finds it available on another company's list, notifies the buyer, and gives him a clearance to proceed with the transaction.

Mr. Wenz' staff includes: D. E. Winslow, principal engineer; E. F. Rodgers, industrial engineer in charge of gas and water inventories; E. M. Gue, industrial engineer in charge of electrical inventories. Both Mr. Rodgers and Mr. Gue were formerly with Duquesne Light Company, and were granted leaves of absence for this important work.

Born in Cannon Falls, Minn., June 15, 1895, Mr. Wenz obtained his early education in the elementary and secondary schools of that community, later attending Northwestern University's School of Commerce. He served in the U. S. Army during World War I and is a past commander of Byllesby Post, American Legion, Chicago.

Before coming with the Philadelphia Company, Mr. Wenz held various purchasing and construction positions with the Northern States Power Company, Public Utility Engineering and Service Corporation, Oklahoma Gas and Electric Company, San Diego Consolidated Gas and Electric Company, and Western States Gas and Electric Company.

In 1930, Mr. Wenz prepared a series of "Apparatus Data Sheets", which were designed to facilitate the preparation of the necessary data used to purchase large items of central station and substation equipment. These forms have been in use over eleven years on the various properties of the Standard Gas and Electric System, and have also been adopted by other utility companies in various parts of United States and by one company in Canada.

In 1933, he designed and installed one of the first photo-electric cell devices used out-of-doors. This device was used for the purpose of counting vehicles and involved the directional count principle using horizontal beams of light which were projected across the roadway at the Cairo Bridge at Cairo, Illinois.

Mr. Wenz is a member of the Edison Electric Institute, Engineer's Society of Western Pennsylvania, and an associate member of the American Institute of Electrical Engineers.

* * *

RENEGOTIATION OFFICE AT GREENVILLE, S. C.

A new branch Quartermaster Corps contract renegotiation office will shortly be established by The Quartermaster General in Greenville, South Carolina. The new office will bring to five the number of such offices now operating. The others are located in New York, Boston, Chicago and San Francisco.

The new unit will be staffed by Quartermaster Corps officers to handle contract renegotiation as required by existing law and will have price adjustment and cost analysis branches similar to those maintained in the Office of The Quartermaster General in Washington. It will serve the area of the South in which a large number of textile mills are located.

The address of the office in Greenville has not yet been determined.

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TEXTURIZED
TRADE-MARK REG. U. S. PAT. OFF.
Towels

Dry your hands on this improved towel—you will discover something new in towel performance. It's Texturized to give a soft, pleasant feel on the skin. It's made of tough, long fibre kraft paper to assure more strength—even when wet. It has exceptional absorbency—which means quicker drying—and it leaves no lint on the skin. Write for testing samples today!

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TYPING, MAILING
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NORTH TONAWANDA, N.Y.

PERSONALITIES in the NEWS

R. V. Wiley, has been appointed Director of Purchases, Personnel and Priorities, Phoenix Glass Co., Monaca, Pa., having resigned his position as assistant area director of the Pittsburgh office of the War Production Board.

James M. Conway, formerly Vice President in charge of Purchases for the Bishop Gutta Percha Company, New York, has been elected president of the company succeeding the late Henry D. Reed. Mr. Conway started his career

with the firm 25 years ago. The Bishop Gutta Percha Co., which was established in 1847 and was the first company to manufacture insulated wire and cable in the United States operates two manufacturing plants in New York City. Mr. Conway is a member of the Board of the Purchasing Agents Association of New York and a member of the Electrical Associates Club.

George Fritz, Purchasing Agent, Superior Oil Corporation, Tulsa, Okla., is now with the Purchasing Department of the Unit Rig & Equipment Co. He is succeeded by C. A. Messick.

Harry M. Linglehas returned to his position as Purchasing Agent for the Humble Pipe Line Co., Houston, Tex., after ten months' service as Purchasing Agent for the War Emergency Pipelines, Inc.

Ralph Etchey is the new head of the Purchasing Department of the Seattle Hardware Co., Seattle, Wash., succeeding George Goddard who has taken an extended leave of absence due to poor health.

H. R. Newkirk has been appointed Purchasing Agent for the Anacortes Shipways Company at Anacortes, Wash.

George L. Altman has joined the Maysteel Products Inc. of Mayville, Wis., where he will be in complete charge of Purchasing. The company manufactures fabricated sheet steel products and assemblies, for which Mr. Altman's past experience especially adapts him in the company's procurement activities.

Miss Elsie P. Leonard, Purchasing Agent, Smith College, Pittsfield, Mass., addressed the annual meeting of the Berkshire County Smith College Club on "Priorities Plus", in which she outlined the procuring of foods and other college supplies in wartime.

Harlan S. Kirk, formerly of Berea College and recently of the School and College Section of the War Production Board, Washington, D. C., is now Purchasing agent of Iowa State College, Ames, Iowa.

E. J. Ellertson who has been Purchasing Agent for Caterpillar Tractor Co., Peoria, Ill., and predecessor companies since 1906, has been appointed to a newly created position, that of General Pur-

chasing Agent. In his new capacity Mr. Ellertson will devote much of his time to assisting J. V. Munro, vice president in Charge of Purchasing in supervising the entire department, including wartime activities of the Expediting and Priorities Division of the Purchasing Department. **W. H. Steele,** Assistant Purchasing Agent since 1929 has been promoted to the position of Purchasing Agent, with supervision over the entire Buying Division, succeeding Mr. Ellertson.

George E. Kennedy is now Purchasing Agent for the Kendall Mills Division of the Kendall Co., Paw Creek, N. C., succeeding Maurice L. Clemence. He has been in charge of priorities for the mills for some time.

C. D. Baldwin, Purchasing Agent for the Bangor and Aroostook Railroad, Milo, Me., addressed the Milo Lions Club on the work of the railroads in wartime.

Richard C. Persons, Controller of Erie County, New York, has been appointed State Commissioner of Standards and Purchase at $10,000 a year, succeeding John T. Higgins of Cohoes who returns to his former civil service status as deputy commissioner. As Commissioner of Standards and Purchase, Mr. Persons will supervise the buying of millions of dollars worth of supplies for the state each year. He was vice president of the Marine Trust Co., Buffalo, when he was appointed County Controller.

Bertil I. Becker, Advertising and Purchasing Manager of Howard Bros. Mfg. Co., Worcester, Mass., was elected governor of the First District of the Advertising Federation of America at the annual meeting of that body, succeeding Oliver M. Drummond of the Crowell-Collier Publishing Co. He is past president of the Worcester Advertising Club.

Barney Bricker is Purchasing Agent for the Oregon Electric Steel Rolling Mills, Portland, Oregon.

George Hirth has been appointed Purchasing Agent for the Mau Sherwood Supply Co., Cleveland. He has been associated with the company 26 years. Richard Spangle formerly of the Purchasing Department has been transferred to the Sales Department.

Mims W. Hutchings, formerly Purchasing Agent for the state of Alabama, has returned to the DeBardeleben Coal Corporation, Birmingham, Ala., as Manager, Purchases & Stores. Mr. Hutchings first became connected with the coal company

in 1923 as Purchasing Agent for the company and its eight industrial stores. In 1939 he was appointed State Purchasing Agent, resigning from this position in March of this year. Mr. Hutchings and President Henry T. DeBardeleben arranged the Birmingham meeting at which Thomas W. Harris organized the local chapter of the National Association of Purchasing Agents.

Stuart F. Heinritz, Editor of PURCHASING, addressed the fifty-first annual convention of the Massachusetts Federation of Women's Clubs at Swampscott, Mass., June 3, on "Taking the Red Tape out of

(Continued on page 190)

No Shortage in *Widgets!*

• You may call them test bars. Our manufacturing department calls them detectives. Samples of every heat for *every* Darling Valve is subjected to the most severe pressure and abuse that modern test machines can develop.

Only when every test has been passed with a margin of safety enough for a bridge—can that metal be used for Darling Valves. Darling has the story of every Darling Valve ever made.

Metal that doesn't pass does not go into cheaper lines—there aren't any—it goes *out.* Nothing that bears our name will ever contain any but the finest metals our proud craftsmen know how to make. That, and their improved design, explain why thousands of users find Darling Valves last longer, cost less, help maintain maximum production.

Darling offers you a quality line of longer-lasting Gate Valves. They come in Fully Revolving Parallel Seat Double Disc, also in Taper Seat—Slotted and Solid Wedge types. In service pressures up to 3000 pounds, you can get Darling Gate Valves in Cast Iron, Bronze, Forged Steel, Cast Steel, and Corrosion Resistant Alloys. Darling also manufactures Compression Type Fire Hydrants, Check Valves, Motor and Cylinder Operated Valves, and many accessories.

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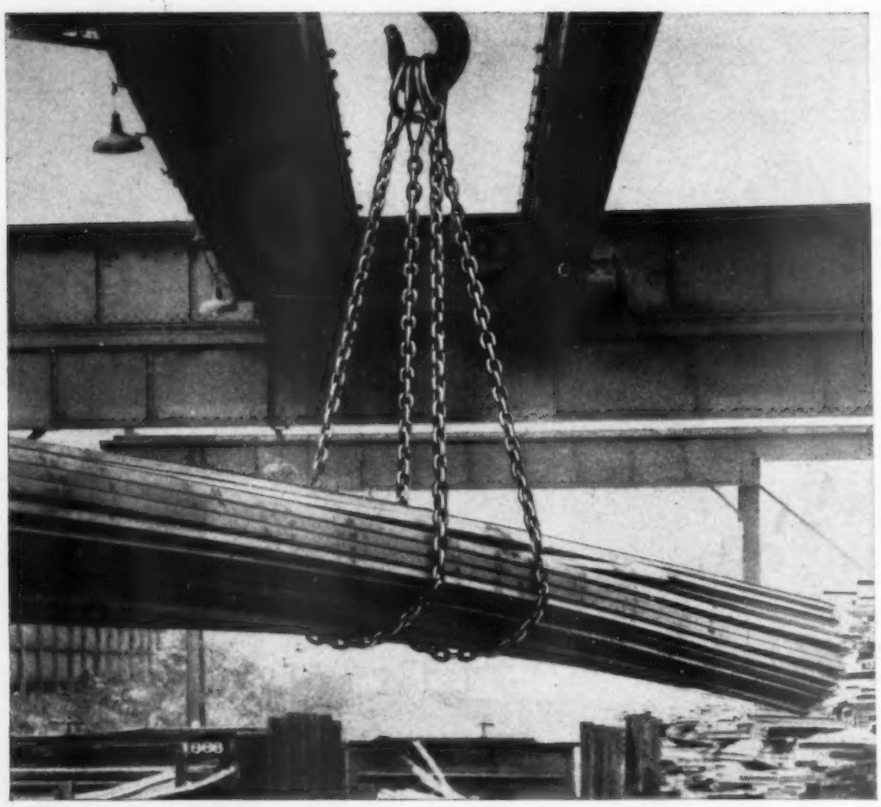

A BOND OF SECURITY

that is winning Uncle Sam's production drive

Thousands of CM Herc-Alloy Sling Chains are helping to win America's production drive by moving valuable materials such as molten metals, guns, tanks and fabricated assemblies. The added bond of security provided by the extra swell of metal at the weld of these Herc-Alloy Sling Chains gives industry an extra margin of safety and wear. *Herc-Alloy Chains, made from special analysis steel, never require annealing.* Engineering catalog No. 44 will be promptly sent on request.

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SLING CHAINS

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INVEST REGULARLY IN VICTORY—BUY WAR BONDS AND STAMPS

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(Affiliated with Chisholm-Moore Hoist Corporation)
120 FREMONT AVENUE, TONAWANDA, NEW YORK
BRANCH OFFICES: NEW YORK • CHICAGO • CLEVELAND

(Continued from page 186)

Government". He also appeared as guest lecturer in the War Production Training Course of the Harvard Graduate School of Business Administration on June 21st.

Stanwood L. Henderson, advertising manager and General Purchasing Agent, Young's Rubber Corporation, New York, has established offices in New York as advertising agent and public relations consultant.

J. W. Bothwell is the new automotive purchasing agent, Kelly-How-Thompson Company, Duluth, Mich., succeeding Ove Hanson.

Frank Perry Nemec has been named manager of the Purchasing Division of General Electric Lamp Department, Nela Park, Cleveland, this post having been made vacant recently by the death of Fred P. Harris. Mr. Nemec joined the operating Department at Nela Park in

1922 where he became manager of the employee's store, ordering and dispersing radio and auto parts and electrical appliances. He became a member of the Purchasing Department in 1928. As manager of this department he will handle all problems related to War Production Board regulations in the procurement of materials from outside vendors, and will serve as contact man with WPB representatives in Washington.

George P. Brockway, Purchasing Manager of the American Optical Co., Southbridge, Mass., is president of the Southbridge Manufacturers and Merchants Association.

Harold V. Chisholm, Purchasing Agent of the Boston Works of the Walworth Company has been promoted to Purchasing Director, and Win Prescott has been advanced to Purchasing Agent.

John E. Henry, storekeeper for the Hunt Spiller Mfg. Corp., Boston, Mass., has been appointed Assistant to the Purchasing Agent, Albert G. Clukas.

Fred R. Tripp is now Purchasing Agent of the Mt. Hope Finishing Co., North Dighton, Mass., succeeding Walter S. Williams, deceased.

Walter D. Kelly has been appointed Purchasing Agent, personnel director and

(Continued on page 192)

Africa is Mafeesh* (FINISHED)
NEXT STOP ??????

When the next invasion comes Clark Fork Trucks will be there delivering the goods as they did in Africa

(SEE PHOTO BELOW)

BUY MORE BONDS TO KEEP 'EM ROLLING

CLARK FORK TRUCKS AT WORK IN R. A. F. ADVANCED AIR BASE, NORTH AFRICA

ARMY E NAVY

CLARK TRUCTRACTOR

DIVISION OF CLARK EQUIPMENT COMPANY

BATTLE CREEK, MICHIGAN, U.S.A.

JOHNSON XLO
Music Wire

MUSIC WIRE
(XLO Brand)
Wire of a thousand uses.
(WD 1085-WD 1095).
Wire sizes
.005" to .200" dia.

JOHNSON STEEL & WIRE CO., INC.
WORCESTER ★ MASSACHUSETTS.
NEW YORK ATLANTA AKRON CHICAGO LOS ANGELES

Permanently Accurate
Torque Wrenches

A Complete Line
of permanently accurate measuring and gauging wrenches that are standard in leading war plants for gauging and controlling torque in production and for testing and measuring in inspection. Indestructible flat beam construction. Double scale visible from all working angles. Capacities from 0 to 7200 inch pounds.
Write for Bulletin

NO
Friction
Adjustments
Moving Parts
Fragile
Mechanisms

P.A. STURTEVANT CO.
ADDISON QUALITY ILLINOIS

A HALF CENTURY
PLUS — ONE

SIMONDS
for GEARS
Since 1892

Still making good gears, after 51 years of service to industry. A year more than a half century of experience in the manufacture of all types — spur, bevel, mitre, worm, rack, internal, etc. Also gears made to your order. In addition SIMONDS distributes Ramsey Silent Chain Drives and Couplings.

THE
SIMONDS GEAR & MFG. CO.
25th and Liberty Sts.
PITTSBURGH, PA.

(Continued from page 192)

supervisor of various service departments for the Fairchild Publications, publishers of trade newspapers for the textile, apparel and home furnishings industries. He succeeds Milton Conboy who has joined the advertising department of the organization.

T. Wesley Eyres has been appointed Purchasing Agent, Mandel Bros., Chicago, succeeding J. Gilbert who has resigned to become controller for the Evans Fur Co. Mr. Eyres continues his responsibilities as store architect.

Nat Lillie, a founder and the first president of the New England Purchasing Agents Association was 87 years old on June 10. He and his wife celebrated their 65th wedding anniversary last Christmas.

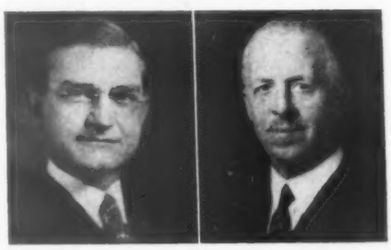
Lawson K. Harvey, formerly with the Purchasing Division of Kroger Grocery & Baking Co., Cincinnati, Ohio, and for the past year connected with the company's sales promotion division, has been named manager of Kroger's Toledo Division.

* * *

AMONG THE PEOPLE YOU BUY FROM

Lt. Vincent C. Rethmann, former chemical engineer, National Starch Products' New York Service Dep't, has been awarded the distinguished flying cross and the air medal with three oak leaf clusters for his achievements in the North Africa theater of operations. He flies a P-38.

Charles R. Hook, president of the American Rolling Mill Co., and **Elisha Walker,**



partner of Kuhn, Loeb & Co., have been elected to the board of directors of the Westinghouse Electric & Mfg. Co.

Leigh Willard, once an Allis-Chalmers draftsman, was elected a company director. He also is president and director of the Interlake Iron Corp., and also a director of the American Iron and Steel Institute.

Aircraft Accessories Corp. of Kansas City, Kans. and Burbank, Calif., has opened an office at 732 17th St., N. W., Washington, D. C.

J. H. Williams & Co., announce the removal of their stock products sales offices

(Continued on page 195)

"FIT FOR DUTY"

● Only first-class cutting tools can turn work out fast enough – and accurately enough – to be rated as "fit for duty" on today's vital production line!

Ship worn-out High Speed Tools back to the steel mills – this high grade steel can do another war job.

MORSE THERE IS A DIFFERENCE TWIST DRILL AND MACHINE COMPANY
NEW BEDFORD, MASS., U. S. A.

NEW YORK STORE: 130 LAFAYETTE ST. - - - - CHICAGO STORE: 570 WEST RANDOLPH ST.

Again... THERE GO YOUR VALVES

Pig Boats

...d Tin...

With a crew ... rine in Paci... to sink twenty or... end of this war. A ... men and with many ... er, can count itself ext... well. The 120 to 150 men who ... destroyer will be pleased if they are ... a cruiser's bag. As for the 1200 men on a ... ship, their chances of doing spectacular dama... to enemy craft are governed by luck. Not more than once in one war do they expect to use their killing capacity to the limit. By the nature of his ship and machine, a submariner thus rates himself as the most efficient killer in the science of naval warfare.

By its very limitations, the submarine offers its crew opportunities to do damage to the enemy which are not given sailors on other types of vessels. Ninety per cent of the time during war our pig boats are looking for the enemy. Cruisers and destroyers, on the other hand, must often pass up the privilege of fighting in order to carry out some broad strategic objective; thus convoying, reconnaissance and scouting become a kind of boresome duty the submariner seldom knows.

Like the crews of Flying Fortresses and Liberators, pig boat men are trained hair-fine for team action. To an extent impossible to sailors on cruisers and destroyers, the security and efficiency of each one is involved with that of his fellows. No submarine skipper rates himself as more valuable than the humblest Seaman 2ndC on his ship. They are a proud lot, our pig boat men, but not boastful. They talk less of their exploits than the public likes. The brasshats apparently have decided to keep it that way. Certain critics, particularly Walter Lippman, believe the strategists in Washington have a long way to go before they will be as smart on undersea warfare as the Germans; this despite the fact that the sub is an American invention.

Maybe we aren't really smart in the way we run this branch of naval warfare, but there can be little criticism of how American subs fight. Prowling the dangerous waters of the western Pacific even to the coasts of Japan they are taking terrific toll of a wily and vicious enemy. One will get you five that when the victory score is at last compiled, the pig boats will be crowding the top.

From the April issue of "Click"

READING-PRATT & CADY

MANUFACTURERS OF

READING CAST STEEL VALVES AND FITTINGS • PRATT & CADY BRASS AND IRON VALVES

D'ESTE VALVE AND ENGINEERING SPECIALTIES

Reading, Pa., Atlanta, Boston, Chicago, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Portland

A DIVISION OF AMERICAN CHAIN & CABLE COMPANY, Inc., BRIDGEPORT, CONNECTICUT

(Continued from page 192)

from 225 LaFayette St., New York, to the plant at Buffalo, N. Y. A local sales office will be maintained at the Lafayette street address to serve the metropolitan area only.

E. Q. Smith, formerly vice president of Bundy Tubing Co., Detroit, has been made president of the Aga Metal Tube Co., Elizabeth, N. J.

William A. Weaver has been elected president and a director of the Arabol

Manufacturing Co., New York, succeeding the late Henry Kohler.

Edwin B. McConville has been elected treasurer of Skilsaw, Inc., Chicago. Mr. McConville joined Skilsaw as comptroller in 1942.

O. W. Bynum has been appointed assistant manager, Marketing Divn., Carrier Corp., Syracuse, N. Y.

W. W. Castleberry, formerly acting service manager, has been appointed service manager at Graybar Electric Company's Jacksonville office.

David S. Hopping, formerly director of sales, Packaging Divn, Celanese Celluloid Corp., now heads the company's new sales

development department. **Wm. F. Cullom** has been appointed head of the Films & Foils Divn., formerly the packaging division of the corporation.

Robert A. Corvey has been name manager of the Southeastern District, Westinghouse Lamp Division, with headquarters in Atlanta.

Madison T. McCarthy, research and experimental engineer, who was in charge of the experimental laboratories at the Howard Foundry Co., Chicago, passed

(Continued on page 196)

When You Need Machined Wood Parts

...turn to BRUCE!

Look to *Bruce* for the answer to your *wood parts* problems—in these days of restricted manufacture of metal, rubber and plastics! E. L. Bruce Co. is in a position to manufacture a variety of wood products—is specializing in quantity production on solid or glued-up wood parts, either completely or partially machined.

FACILITIES—Seven modern plants, centrally located for timber and transportation. Complete and efficient woodworking machinery of all types, including new box plant at Bruce, Miss.

EXPERIENCE—Bruce has a background of more than 25 years in the lumber industry. It has pioneered many important wood developments.

PERSONNEL—Over 3,000 skilled workmen and most capable key men. Free technical and advisory service under the direction of one of the country's leading wood experts.

DEPENDABILITY—Individual orders ranging up to a million dollars and more delivered exactly on schedule. Highest financial and credit ratings.

E. L. BRUCE CO. • 1522 N. Thomas Street • Memphis, Tenn.

SEND US YOUR INQUIRIES

For our help with your problems, simply send a description, blue print or sample of items needed. Or write for further information.

BRUCE *Specializing* **IN WOOD PRODUCTS**

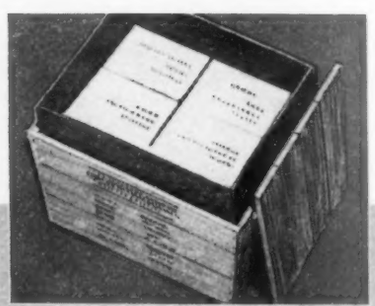
MANUFACTURERS OF BRUCE STREAMLINE FLOORING

the Finishing Touch...
CAN BE RUINED UNLESS PROTECTED AGAINST RUST

Precision finish on parts can be ruined by condensed moisture or finger marks that cause corrosion. Rejections resulting from rust are unknown in plants using NO-OX-ID, which stops corrosion before it gets started. There is a combination of NO-OX-ID and NO-OX-IDized Wrapper to solve every rust problem. Let us help you solve yours. Dearborn Chemical Company, Dept. AA, 310 S. Michigan Ave., Chicago, Ill.

PARTS TO PROTECT WHILE IN PROCESS

Coat them with NO-OX-ID. There is a light consistency for this very purpose. It does not interfere with inspection. Can be removed easily, if necessary. Other consistencies provide oil type coating or dry to wax-like finish.



SHIPMENTS TO PROTECT WHILE IN TRANSIT

Coat the entire part with NO-OX-ID; then wrap in NO-OX-IDized Wrapper which conforms readily to irregular shapes. Pack in case lined with NO-OX-IDized Wrapper to form the complete water-vapor barrier.

"THE LEADER FOR 25 YEARS"

NO-OX-ID
IRON + OX = RUST
rust preventive

(Continued from page 195)

away June 13. Mr. McCarthy was well known for his research and development work in non-ferrous foundry processes.

C. K. Swafford, works manager and member of the board of directors of Gisholt Machine Co., Madison, Wis., was elected a vice president of the company.

Paul H. Hill has been appointed sales manager, and **Charles H. Brown** has been

made assistant sales & advertising manager, Schwarze Electric Co., Adrian, Michigan.

Thomas F. Hanley, treasurer and director of the Dowty Equipment Corp., Long Island City, N. Y., has been appointed general manager of the company.

Charles A. Conklin has been appointed manager of the Westinghouse Lamp Division's Central District with headquarters in Pittsburgh, Pa.

Cornelius B. Dorgan has been made factory manager, Cleveland Welding Co.,

Cleveland, Ohio. He has been associated with the company for the past 30 years.

McKenna Metals Co., Latrobe, Pa., has taken over the direct sale, engineering and service of Grayson-Kennametal milling cutters.

Max Pischke has been appointed acting district manager, Allegheny Ludlum Steel Corporation's Pittsburgh district sales office, to take over the work of Robert H. Gibb, former manager who has left to accept a commission in the U. S. Army.

The Charles Parker Co., Meriden, Conn., announces the dealth of its vice president, Wm. E. Hinsdale, who has been very active for the past 15 years in the reorganziation of the company. He also

(Continued on page 198)

FORGED FLAT SPRINGS
. . . . MADE IN ANY DESIGN FOR HEAVY DUTY APPLICATION

Muehlhausen's ability to produce forged flat springs in large quantities, and to any special design, has given product engineers greater latitude in developing improved war matériel—and provided greater speed in producing it.

This is the result of Muehlhausen's complete hot forming facilities — huge presses, controlled-atmosphere furnaces, quenching tanks as big as swimming pools, a control laboratory for testing and checking—all housed in a separate, complete plant, specially designed for volume production of heavy springs.

Don't let the improvement of your product be hampered by spring problems. Consult Muehlhausen engineers and get the benefit of their experience. Muehlhausen's ability to produce unusual springs may help you do things never before thought possible. *Send for Free Die Spring Bulletin.*

MUEHLHAUSEN SPRING CORPORATION
Division of Standard Steel Spring Company
675 Michigan Avenue, Logansport, Indiana

MUEHLHAUSEN
MS
SPRINGS
EVERY TYPE AND SIZE

TWO "SHORTAGES" SOLVED

PROMPT DELIVERY!

IDEAL

IDEAL

Solderless, Tapeless

WIRE CONNECTORS

Wire Nuts

Alternate for "Prohibited" Solder Joints

SAVE CRITICAL MATERIALS. IDEAL "Wire-Nuts" are an alternate *and improvement* over solder-and-tape electrical wire connections (now "prohibited" or restricted by four government departments). Contain no copper or copper alloys; no tin or rubber. Meet all government restrictions and requirements.

★

For connecting all sizes of wires from two No. 18 to three No. 10. *Immediate deliveries* for use on Production Lines or Factory Wiring.

★

This type of connector accepted by U. S. Bureau of Standards. Ideal Connectors are listed by Underwriters' Laboratories, Inc.

Rechargeable

STORAGE BATTERIES for FLASHLIGHTS

Fit standard flashlight case.

Same size as two 1¼" Size D dry cells.

Outlasts 400 dry cells

No restrictions on IDEAL Rechargeable Storage Batteries for Flashlights — and *one* IDEAL storage battery can conserve about 68 lbs. of carbon, zinc, and other critical materials.

★

Gives brighter, steadier, more dependable light — always a "fresh" battery, simply by regular recharging. GUARANTEED. Thousands in use.

★

Recharged over and over again through simple charger, which plugs into any light socket. ***Immediately Available.***

Write or Wire for Price, Size and Application Details

IDEAL Sycamore

★ IDEAL COMMUTATOR DRESSER CO ★

4136 Park Ave. *Sales offices in all principal cities.* Sycamore, Ill.

(Continued from page 196)

was president of the Parker Realty Co., a director of Charles Parker Estate, Inc., and a member of the advisory committee of the Meriden branch of the Hartford-Connecticut Trust Company.

Garlan Morse has been appointed Philadelphia Division manager with head-

quarters in the Liberty Building, Philadelphia, by Sylvania Electric Products, Inc., Salem, Mass.

West Disinfecting Co., Long Island City, N. Y., announces the organization of a group of trained service men to operate from its branches throughout the country.

Old Town Ribbon & Carbon Co., Inc., Brooklyn, N. Y., announces the removal of their Chicago offices to larger quarters at 225 No. Wabash avenue.

Lewis H. Brown, president of Johns-Manville Corp., New York, recently had conferred upon him the honorary degree of LL.D. at Brown University's commencement exercises.

John S. Gregg is the new district sales manager of Inland Steel Company's Cin-

cinnati sales office. Previous to his transfer to Cincinnati he was covering the Wisconsin territory out of the Milwaukee office.

Ohio Equipment Co., Inc., Cleveland, Ohio, has moved into new quarters at 1367 East 6th St., Cleveland.

William P. Drake, recently appointed Manager of Sales of the Pennsylvania Salt Manufacturing Co., Philadelphia, has

(Continued on page 200)

GOOD TOOLS ARE PART OF THE PICTURE

On Consolidated Vultee's vast mechanized assembly lines, where famed Liberator bombers and transports move swiftly to completion, Snap-on tools are part of the picture! Their accuracy, speed and power . . . their flexibility and ease of application in difficult places . . . save precious time in countless operations.

Everywhere in the great panorama of America's Production-for-Victory, Snap-on tools play a vital part . . . dependable aids to fast, accurate workmanship in every phase of production, assembly and maintenance. Write for catalog of 3,000 Snap-on tools, and address of nearest Snap-on factory branch.

SNAP-ON TOOLS CORPORATION
8048-G 28th Ave. • KENOSHA, WISCONSIN

Snap-on Tools
THE CHOICE OF BETTER MECHANICS

Salt Brings Back That Will To Work

Heat-Fag is an ever-lurking enemy in every shop where toil and sweat are writing new production records. Body salt lost by sweating must be replaced or Heat-Fag sets in. Lowered vitality, fatigue, production slowdowns, accidents and absenteeism can often be laid at the door of this insidious force.

The finger of Accidents is always beckoning to the fatigued, inalert worker. That's why Heat-Fag, ever present when men sweat, takes such a heavy toll in man-hours lost.

Salt tablets restore the body salt lost through sweating. They help keep men alert . . . efficient.

In leading industrial plants, salt tablets are a "must" for men who sweat. They maintain the will to work through long, hard, hot hours.

This Is What Happens When Sweating Robs the Body of Salt . . .

MORTON'S Heat-Fag SALT TABLETS

QUICK DISSOLVING
(Less than 30 seconds)
This is how a Morton Salt Tablet looks when magnified. See how soft and porous it is inside. When swallowed with a drink of water, it dissolves in less than 30 seconds

Case of 9000, 10-grain Salt Tablets, $2.60
Salt-Dextrose Tablets case of 9000, $3.15

Place MORTON'S DISPENSERS at all Drinking Fountains.
They deliver salt tablets, one at a time, quickly, cleanly — no waste. Sanitary, easily filled, durable.
500 Tablet size - $3.25
1000 Tablet size - $4.00

Order from your distributor or directly from this advertisement . . . Write for free folder.

MORTON SALT COMPANY • CHICAGO, ILLINOIS

(Continued from page 198)

been placed in charge of the company's sales of acid and alkali-resistant cements and chlorinated organic chemicals in addition to his former duties as Manager of the Cleaner Division.

The Ridge Tool Co., Elyria, Ohio, recently moved from its original factory site at North Ridgeville, into modernized plant and offices in Elyria.

H. J. Barnsley, vice president of Jenkins Bros., New York, N. Y. has been elected

to the governing board of Jenkins Bros. Ltd., Montreal, Canada.

Raymond R. Ridgway, associate director of Research, Norton Co., Worcester, Mass., was awarded the Jacob F. Schoellkopf Medal for 1943, at meeting of the Western New York Section of the American Chemical Society.

Arthur H. Sanford of the Wilmington Del. branch office of the Hercules Powder Co., has been appointed manager of Naval Store Sales at Boston. Hird & Connor, Inc., Boston, will continue as distributors in the New England area.

D. W. Walsh has been named general

sales manager, tire division, United States Rubber Co., New York.

Guardian Electric Manufacturing Co., Chicago, announce that its general offices are now located at 1400 West Washington Blvd.

Robert Gair Co., Inc., New York, recently opened an exhibit of war-born packages, featuring innovations in packaging

(Continued on page 202)

SEE MORE PRODUCTION

THROUGH CIRCLE "C" SUPER HIGH-SPEED STEEL

In shop after shop, **CIRCLE "C"** is helping to break earlier high-production records.

Today's grim war-demands have revealed hitherto unrecognized advantages in using this truly **"SUPER"** high-speed steel for machining the tough, hard, alloy steels that go into America's latest weapons and equipment for victorious warfare.

There are definite applications where **CIRCLE "C"** is yielding at least 25% faster machining speeds, as compared with ordinary high-speed steels—for example, in airplane-engine production.

The new bulletin (No. SL-2005) tells more.

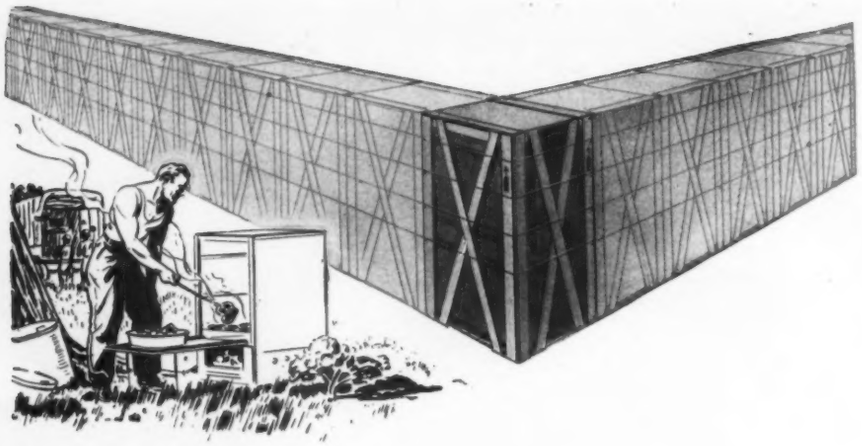
Send for
BULLETIN SL-2005

ARMY E NAVY

Firth-Sterling
STEEL COMPANY

Also makers of "FIRTHITE" Tungsten-Titanium Carbides for steel cutting

Offices: McKEESPORT, PA. NEW YORK - HARTFORD - PHILADELPHIA - CLEVELAND - DAYTON - DETROIT - CHICAGO - LOS ANGELES



SAFE TRANSPORTATION

FOR A *Field Range*

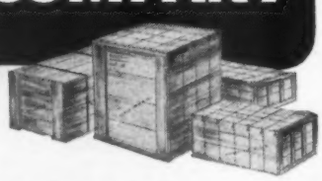
STOVES for army field kitchens are now being shipped safely and without delay in General Crates. These strong, durable containers are designed to meet the tough handling conditions necessitated by war's speed-up requirements.

Stoves and other vital war shipments are reaching the fighting fronts and the production home fronts in General Boxes and Crates. As a result General Box engineers have acquired extensive experience in helping shippers meet Federal Packing Specifications. Working in close co-operation with many manufacturers in many industries, they have designed and manufactured containers for a wide range of war products. They are thoroughly familiar with *all* shipping container requirements.

Why not investigate today? General Box engineers will be glad to help you with your shipping problem—help you determine which of the allowable alternates is most practical for your products. Write us.

For manufacturers of war products: General Heavy Duty Wire-Bound and Nailed Wooden **BOXES** *and* **CRATES**
Where availability of materials permits: Corrugated **BOXES** *and Wood Cleated Fibreboard* **CONTAINERS,** *Generalite and Nailed Strapped* **BEVERAGE CASES** *for Domestic Service*

GENERAL BOX COMPANY



GENERAL OFFICES: **48 West Illinois Street, Chicago, Illinois**
DISTRICT OFFICES AND PLANTS: **Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, New Orleans, Sheboygan, Winchendon; Continental Box Company, Inc.: Houston, Dallas.**

(Continued from page 200)

technique, and new developments in material and construction.

R. M. Cherry has been appointed assistant manager of General Electric's Industrial Heating Division, Schenectady, N. Y.

George W. Person, formerly abrasive engineer in the St. Louis territory for Norton Co., is now manager of the Abrasive Division of Screw Machine Supply Co., Chicago, one of Norton Company's distributors.

Donald H. Powers has joined the staff of Merrimac Division of Monsanto Chemical Co., Everett, Mass., as specialist on applications of chemicals in the textile industry.

Frederick S. Rowe has been appointed manager of electronic tube production and stocks, Westinghouse Lamp Division, Bloomfield, N. J.

Charles A. Babbitt, succeeds Lorin W. Grubbs, abrasive engineer, Norton Co., for the states of Va., N. C., S. C. and part of West Va. and Tenn. Mr. Grubbs has been commissioned a lieutenant (j. g.) in the U. S. Navy.

* * *

OPA RELEASES NEW DIGEST OF INTERPRETATIONS

The Office of Price Administration has released the twenty-second of a series of pamphlets digesting interpretations of specific schedules and regulations other than the General Maximum Price Regulation and Maximum Price Regulation No. 165—Services.

The pamphlet, entitled *Recent Price Interpretations No. 22,* continues the method begun in the prior issue of grouping the digests by commodities rather than numerically by schedule or regulation number and of placing digests of a general nature under "General Materials". The policy of including a table of the schedules and regulations in numerical order on the first page of the pamphlet is also continued in this issue.

Digests of interpretations of special interest will be found on the following subjects:

Sellers' and buyers' cooperatives and the payment by them of bonuses to members and non-members, Digest No. 1.

Dissolutionship of a partnership subject to regulation No. 178 (Women's Fur Garments), Digest No. 13.

Scrap rejected and reshipped without reworking, under Schedule No. 4 (Iron and Steel Scrap), Digest No. 55.

Sale by winning bidder of his right to buy, under Schedule No. 1 (Second-Hand Machine Tools), Digest No. 79.

Sales of new automobiles between dealers, under Schedule No. 85 (New Passenger Automobiles), Digest Nos. 81 and 82.

(Continued on page 204)

. . . IN ALL OF AUTO-LITE'S 26 GREAT DIVISIONS

AMERICA is doing the greatest job of mass production in history. Setting a pace that goes far toward assuring an Allied Victory. In all of Auto-Lite's 26 great manufacturing divisions our men and women are speeding weapons and equipment to the far corners of the earth. Some of the products produced in these crowded hours at Auto-Lite are:

STARTING, LIGHTING AND IGNITION • SPARK PLUGS • BATTERIES • RELAYS • SWITCHES AND GOVERNORS
FIRING CONTROL APPARATUS • FUSES • ETCHED, EMBOSSED AND LITHOGRAPHED NAMEPLATES
GENERATORS • HORNS AND SIGNAL DEVICES • METAL STAMPINGS • INSTRUMENTS AND GAUGES
PROJECTILES • REGULATORS • STEEL CARTRIDGE CASES • ALUMINUM AND ZINC DIE CASTINGS
WIRE AND CABLE • MESS KITS • GUN FIRING SOLENOIDS • BLACKOUT LIGHTING • IRON CASTINGS
BOOSTERS • PLASTIC PRODUCTS • LEATHER GOODS • FRACTIONAL HORSEPOWER MOTORS
GUN FEED MECHANISMS • ARMOR PLATE • TRACER AND IGNITER SHELLS • GUN SIGHT CASES
AUTOMATIC PILOTS • DIRECTIONAL GYROS • AUTO-GYRO COMPASSES

TOLEDO, OHIO THE ELECTRIC AUTO-LITE COMPANY SARNIA, ONTARIO

AUTO-LITE

ASSAULT
BOATS
for example
Special cold-forged metal parts for assault boats are made on equipment used regularly in the manufacture of Hassall special nails, rivets and screws. Thousands of similar examples. Catalog free.
JOHN HASSALL, INC.
Established 1850
404 Oakland Street, Brooklyn, N. Y.
SPECIAL NAILS RIVETS SCREWS
Hassall

Rotary Model 5-D-6

Success of a Mission!

There's hardly an industry that isn't contributing in some way to the production of bombers, fighters, pursuit planes . . . or to the personal needs of the gallant men who fly them. "Keeping 'em flying" demands the supreme effort of every man, every machine on the production line.

PRODUCTIMETERS

on this vital front, give exact count for production control . . . conserve man-hours, eliminate waste. There's a standard counter for practically every need: Stroke, Rotary, Conveyor, Lineal, Wire Measuring, Predetermined, Electric . . . built for speed, accuracy and day after day hard use.

Send for your copy of Bulletin No. 100

DURANT MFG. CO.
1959 N. Buffum St. Milwaukee, Wis.
159 Eddy St. Providence, R. I.

Active Duty

PROTECT IRREPLACEABLE STEEL . . . ECONOMIZE!

GALVANIZE AT—

ENTERPRISE GALVANIZING COMPANY

2519 E. Cumberland St., Philadelphia, Pa.

★ *24-hour Service!* ★

(Continued from page 202)

Rentals for leased equipment undergoing repair, cleaning or overhaul, under Regulation No. 134 (Construction and Road Maintenance Equipment Rental Prices, etc.), Digest No. 86.

1 1 1

PURCHASING PERSONNEL WANTED BY NAVY

The handling of supplies and accounts in the Navy is a gigantic job. Every variety of stores and equipment must be procured, purchased, inventoried, warehoused, shipped and distributed as needed.

Experts with civilian experience in these phases of handling supplies, who are not engaged in an essential war industry, are needed as commissioned officers in the Navy. A college education is desirable; however, outstanding men without a degree but with successful experience in this field can be considered.

Purchasing agents with a technical knowledge of raw materials and finished products and men who know specifications and the sources of supply in their field may be qualified to purchase naval supplies and equipment. The age requirements are 32 to 50 years.

Men 28 to 38 years of age with college training, particularly with courses in business administration, are needed as assistants to supply officers at yards and stations. Extensive practical experience should include administrative experience, such as the planning of plans and policy, and the handling of groups of people.

Inventory men or managers of warehouses between the ages of 32 and 50, who have been in complete charge of the receipt, storage, preservation and issue of stores and materials, particularly in the industrial field, may measure up as Officers in Charge of naval warehouses and supply depots.

In the building of ships and machinery there is a constant problem of insuring the procurement of essential materials. These materials and finished products must reach production lines and shipyards as needed. Executives with purchasing and production allotment experience in the building industry, "durable goods", automotive, refrigerator or related fields should apply. This billet is limited to capable men between the ages of 35 and 44 years.

A wider range of 28 to 50 years is permitted for supply officers who know inventory control, and stock control through perpetual inventory and fluctuating demands. Civilians with a broad administrative knowledge of stock control in large industrial plants or department stores may qualify as assistants to supply officers at major naval stations.

The shipping of stores and equipment is a basic naval supply problem. Practical experience must include five or more years in shipping by water, rail, motor or air. To qualify, men in this field must have had a very successful record, also know the packing, storage and protection of goods. They should have a basic and thorough knowledge of

(Continued on page 206)

FAMOUS LIFE LINES

1 **GUADALCANAL,** important link in our South Pacific life line, is now consolidated into one of our most important island bases. Here a newly arrived detail of American troops is landing while a Flying Fortress gives protection overhead.

Official Signal Corps Photograph

2 **AMERICAN TRUCKS** with "life lines" by Bundy, followed our first troops ashore on Guadalcanal—landed by "crocodiles" also with Bundy "life lines." More than forty types of American military vehicles have an average of over twenty Bundy Tubing parts.

Official Signal Corps Photograph

GUADALCANAL was more than a glorious victory for U. S. fighting men. It was a triumph of transport.

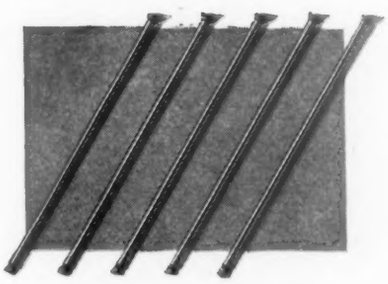
Against incredible odds of distance and terrain, the long life line was kept open. Men, supplies, trucks and planes were delivered at the front.

It is our job, here at Bundy, to produce mile on mile of metal tubing which plays an important part in keeping Uncle Sam's ships moving, aircraft flying, ground vehicles rolling.

Wherever pressure lines are needed for fuel, lubrication or refrigerants — wherever hydraulic brakes are used—wherever vacuums must be transmitted—there is work for Bundy Tubing.

At present, these Bundy "life lines" are used for more than 5,000 different mechanical and structural parts in the vehicles and equipment of our fighting forces. And the list is growing steadily.

Whatever the future needs of our armed services may be, we shall do our utmost to meet them with quality and quantity. Bundy Tubing Company, Detroit, Michigan.



THESE MOTOR TRUCK PUSH RODS, made from Bundy Tubing, are holding up under strenuous service in thousands of U. S. military vehicles in every part of the world. Bundy Tubing was selected because of its light weight, strength and resistance to vibration fatigue.

Buy U. S. War Bonds
Get in Your Scrap

BUNDY TUBING

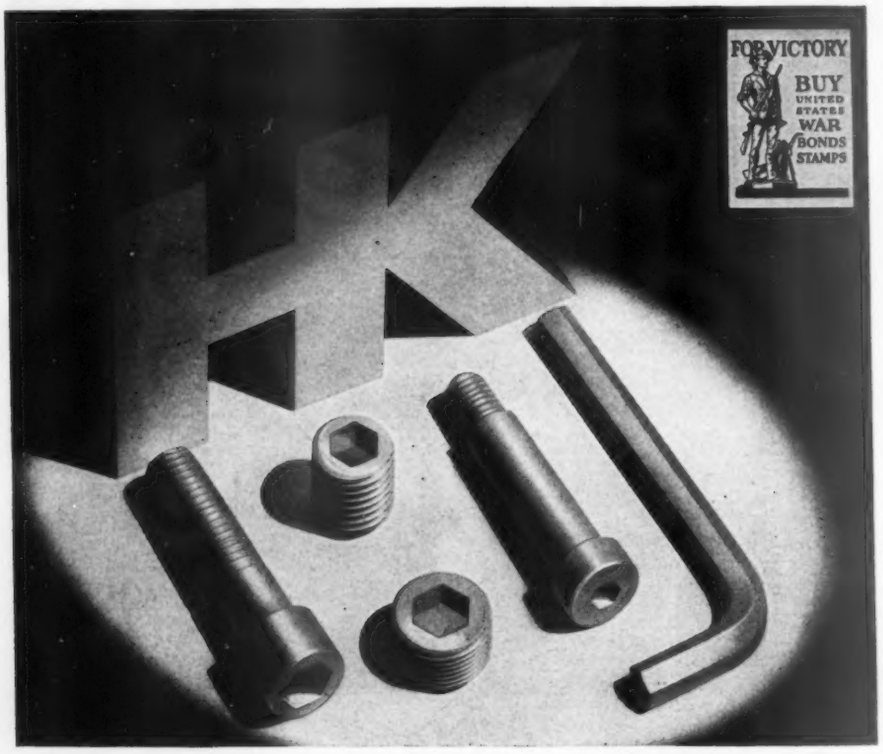
ENGINEERED TO YOUR EXPECTATIONS

BUNDYWELD double-walled steel tubing, hydrogen-brazed, copper-coated inside and outside. From Capillary sizes up to and including $\frac{1}{16}$" O. D. This double-walled type is also available in steel, tin-coated on the outside, and in Monel.

BUNDY ELECTRICWELD steel tubing. Single-walled — butt welded — annealed. Available in sizes up to and including 2" O. D. Can be furnished tin-coated outside in smaller sizes.

BUNDY "TRIPLE-PURPOSE" tubing. Double-walled, rolled from two strips, joints opposite, welded into a solid wall. Available in all Monel; all steel; Monel inside—steel outside; Monel outside—steel inside. Sizes up to and including $\frac{5}{16}$" O. D.

THE BETTER FASTENING METHOD



fibro forged SOCKET SCREWS by HOLO-KROME

Demands for design simplification — man hour savings — efficient use of materials — increased production — have been made possible in countless applications by the use of Holo-Krome FIBRO FORGED Socket Screws — the better fastening method.

It's the "Completely" Cold Forging method (patented and used solely by Holo-Krome) that gives these precision made Socket Screws the qualities to unfailingly perform under the unusual stress of war time requirements. Specify "HOLO-KROME".

WRITE FOR IT — Catalog of Socket Screw Standards

THE HOLO-KROME SCREW CORP., HARTFORD, CONN., U.S.A.

(Continued from page 204)

space requirements, transportation facilities, rate schedules, tariff and port regulations.

Candidates who are interested should apply to the nearest Office of Naval Officer Procurement.

GOVERNMENT SEEKS QUARTZ CRYSTALS

The government needs more quartz crystals. And so the WPB has sent out a call to all citizens who may own property on which such material may be located, or who know where any can be found, to get in touch with the Miscellaneous Minerals Division, War Production Board, Temporary "R" Building, Washington, D. C. If samples can be provided at the same time, they will be welcome. There should be several samples of the best crystals obtainable from the location.

These crystals are needed for the manufacture of quartz oscillator plates used in radio equipment for the armed forces. At present practically all of the quartz used for this purpose comes from Brazil.

The Miscellaneous Minerals Division wants only separate individual crystals—clusters, groups or grainy masses won't do. And each crystal must weigh at least half a pound, be at least an inch thick and three inches long. It must be clear and colorless on the inside, although light smoky quartz can be used. But milky quartz, rose quartz and purple quartz (amethyst) are useless.

BOOK ON LEAD POISONING

The publication of a "Bibliography and Survey on Lead Poisoning, With Particular Reference to Packaging," by Florence A. Brous, B.A., M.Sc., is announced by Packaging Institute, Inc.

Because of the restrictions on the use of tin and other packaging materials through their diversion to war purposes, the book has particular and timely interest for firms in the food, drug and cosmetic industries faced with the necessity of making substitutions in packaging materials.

Inquiries regarding purchase of the book should be directed to the offices of the Packaging Institute, at 342 Madison Avenue, New York 17, New York.

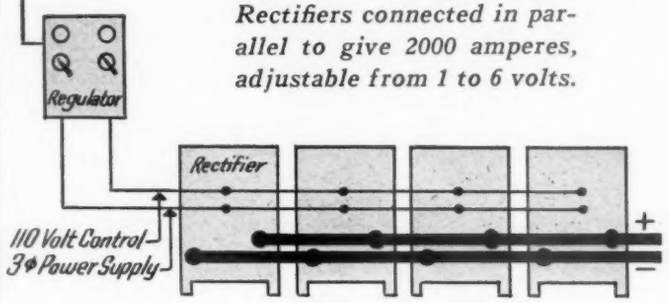
DEPT. OF LABOR ISSUES PAMPHLET ON ABSENTEEISM

One of the vital problems now commanding the attention of industry is absenteeism. Many requests from war contractors for information and control methods on this subject led the Division of Labor Standards of the United States Department of Labor to make a special study, and publish a pamphlet setting forth the experiences of management in dealing with absenteeism in some 200 outstanding war plants. Copies of the publication "Controlling Absenteeism," may be obtained on request to the Division of Labor Standards, United States

(Continued on page 208)

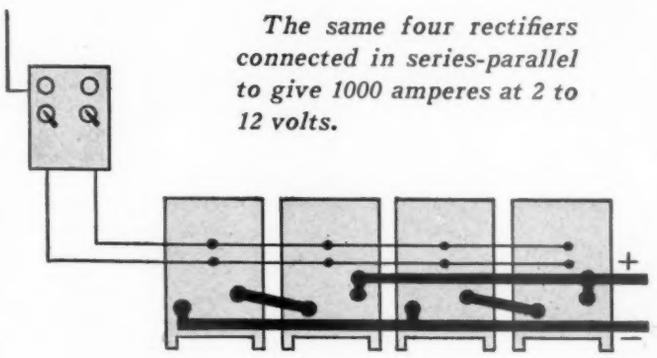
ONE TOOL FOR MANY JOBS

Four G-E Copper Oxide Rectifiers connected in parallel to give 2000 amperes, adjustable from 1 to 6 volts.



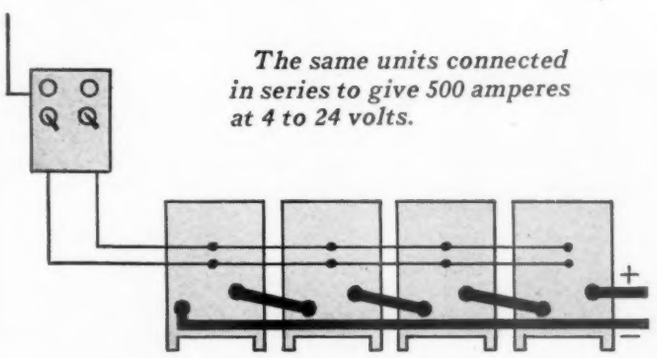
A

The same four rectifiers connected in series-parallel to give 1000 amperes at 2 to 12 volts.



B

The same units connected in series to give 500 amperes at 4 to 24 volts.



C

How one electroplater adapted General Electric Copper Oxide Rectifiers for various jobs, including still-tank plating, barrel plating and anodizing

A. 6-VOLT TANK PLATING

By connecting four G-E Copper Oxide Rectifiers in parallel, the plater obtained 2000 amperes at from 1 to 6 volts for a still-tank plating job. The single regulator for the four units gave complete control over the full range output.

B. 12-VOLT BARREL PLATING

When a barrel-plating contract was obtained, it was a simple matter to rearrange the four rectifiers in series-parallel so as to secure 1000 amperes at from 2 to 12 volts required for the job.

C. ANODIZING

The same four rectifiers were also reconnected in series for an anodizing job requiring 500 amperes at 4 to 24 volts.

OTHER COMBINATIONS

These are only three common examples of the wide variety of groupings that can be obtained with G-E Copper Oxide Rectifiers to serve specific needs, including 40 volt anodizing.

Why not investigate the potential uses of G-E Copper Oxide Rectifiers in your electroplating? G-E Tungar and Metallic Rectifier engineers will be glad to consult with you. Write to Section

GENERAL ELECTRIC

You Can't Afford Leaky Valves

- Repair parts are scarce
- New Valves require high priorities
- Your present Valves have to serve better-longer
- Regrinding helps make them last longer
- Note the Illustrations showing the six simple operations required

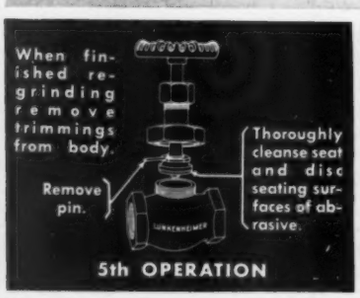
They're expensive and they may result in costly slow-downs and sometimes even shut-downs—which can't be tolerated in these critical times.

With proper care . . . periodic inspection to locate even slight leaks . . . and immediate repair, your valves will serve you better and last longer.

Lunkenheimer Valves are easy to keep in good operating condition. Seats and discs can be readily reground and all parts are quickly accessible without taking the valves out of the line. Properly cared for, they give you a practically permanent installation.

ESTABLISHED 1862
THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U. S. A.
NEW YORK CHICAGO
BOSTON PHILADELPHIA
EXPORT DEPT. 318-322 HUDSON ST., NEW YORK

Replace trimmings in body and regrind.
Extension on bottom of hub should enter neck of body while regrinding.
Allow union ring to remain loose
4th OPERATION


When finished regrinding remove trimmings from body.
Remove pin.
Thoroughly cleanse seat and disc seating surfaces of abrasive.
5th OPERATION

LUNKENHEIMER VALVES

(Continued from page 206)

Department of Labor, Washington, D. C. War Production Drive Headquarters, War Production Board, Washington, has also issued a pamphlet on this subject. Its title is "Ways of Dealing With Absenteeism".

1 1 1

CANS FOR NON-FOOD PRODUCTS CO M81 AMENDED

The number and quantities of non-food products which can be packed in cans during 1943 are increased by Conservation Order M-81, as amended by the War Production Board.

In addition, the amendement clarifies or modifies certain provisions of the order.

The amended order makes the following changes:

1. The quota for packing paint, varnish, lacquer or other protective coatings in fibre-bodied cans with blackplate ends is increased to 55 per cent of the area of plate used during 1942, from 35 per cent previously. Paint manufacturers have been experiemnting with an all-fibre container for several months, but none has yet proved to be satisfactory.

2. Restrictions prohibiting the use of blackplate cans for drain cleaners and lye after June 30, 1943 are removed. In the first six months of 1943, the packing quota for these products was 50 per cent of the area of plate used in 1942. Under the amendment, the 1943 quota is raised to 100 per cent of the base period.

3. Restrictions on the use of blackplate cans for toilet bowl cleaners after June 30, 1943 are modified. In the first six months of 1943, the packing quota for these products was 50 per cent of the area of plate used in 1942. After June 30, the use of backplate was prohibited. Under the amendment, backplate for toilet bowl cleaners may be used as follows:

(a) From January 1, 1943 to September 30, 1943, the quota is 75 per cent of the area used in 1942.

(b) From October 1, 1943 to December 31, 1943, the quota is 12 per cent of the area of backplate used in 1942.

Experiments have been conducted for several months with fibre-bodied cans with blackplate ends for drain cleaners, lye, and toilet bowl cleaners, but such containers have not yet proved satisfactory.

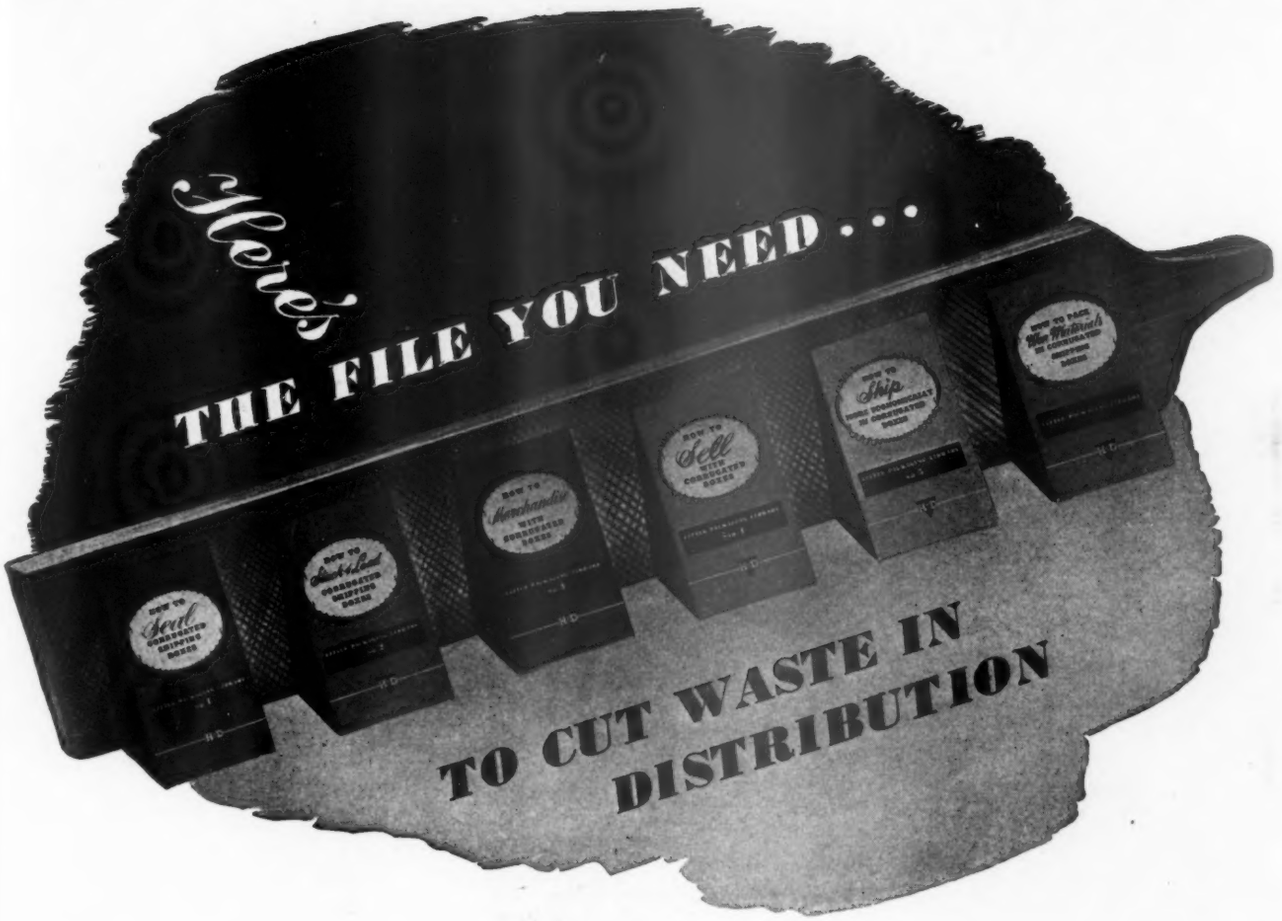
4. Twelve additional non-food products are added to the list which may be packed in cans. Included in this group are cyanide, phenol, phosphoric acid, sodium sulfide, and zinc chloride.

5. Cans made of 1.25 hot dipped tinplate are permitted for the first time for packing the following in brine: Atlantic Sea Herring, Pacific Sea Herring, and Pilchards.

6. Can manufacturers are permitted to use, instead of 0.50 electrolytic tinplate, any "menders" arising in the production of 0.50 tinplate. Previously, the use of "menders" was prohibited. A "mender" is a reject sheet of electrolytic tinplate which has been converted into a prime or second grade sheet by hot dipping.

7. Under the amendment, the manufac-

(Continued on page 212)



IT'S HANDY . . . it's helpful . . . it has dozens of applications in hundreds of businesses. It will help you smooth out rough spots in packing, shipping and distribution, give you an edge in efficiency.

There's no time like the present to make use of this tool. The enormous load being carried by the railroads means inevitable waste of materials, machinery, manpower and transportation facilities. That waste can be curtailed only if every manufacturer takes immediate steps to improve shipping methods.

The first step is to send for this complete file of packaging "text-booklets." Every man in your organization who is concerned with shipping and distribution will find this "refresher course" in packaging a definite aid in locating and correcting many of his problems. Write for as many sets as you need . . . they're yours for the asking, FREE, without obligation.

Protect the Product

BETTER SEE H&D AUTHORITY ON PACKAGING

HINDE & DAUCH Executive Offices: 4323 Decatur Street, Sandusky, Ohio

FACTORIES in Baltimore • Boston • Buffalo • Chicago • Cleveland • Detroit • Gloucester, N. J. Hoboken • Kansas City • Lenoir, N. C. • Montreal • Richmond • St. Louis • Sandusky, Ohio • Toronto

The Gestapo would kill to get this information

IT'S YOURS SIMPLY FOR THE ASKING!

TO you men, who are today using steel in a hundred new ways—who must perform the veritable miracles of production upon which the success of our war effort depends—to you we offer practical assistance in the use of steel that will make your job easier.

Here for *your* use are the very latest wrinkles in the wartime application of steel that keen metallurgical skill and American manufacturing ingenuity have developed.

Much of this information is of such a "hush-hush" nature that we dare not be specific here. But this we can say—most of it is based on the solution of knotty problems in war production such as you face every day, and therefore should be of inestimable help to you.

Closely guarded in our confidential files are actual case histories that will help you short-cut your fabricating processes—that will make steel do more for you than it has ever done before, or do it better.

Here is the kind of information that Axis agents would stop at nothing to get their hands on.

It is our responsibility to see that this information is distributed where it will do the greatest good. It is your responsibility to use it to America's advantage.

ONE AIM . . . VICTORY . . . BUY BONDS!

CARNEGIE-ILLINOIS STEEL CORPORATION

Pittsburgh and Chicago

Columbia Steel Company, San Francisco, *Pacific Coast Distributors* · United States Steel Export Company, New York

USS

UNITED STATES STEEL

SPEED UP PRODUCTION WITH MACHINE TOOLS THAT *Fit the Job!*

ALERT management has substantially increased production, with marked savings in power, capital investment and operating cost—by using streamlined, fast Walker-Turner Machine Tools on hundreds of jobs where heavy machine tools were formerly employed.

With these accurate, easily operated Walker-Turner units, unskilled operators quickly reach maximum production. They can be installed anywhere on the production line because of the compactness that advanced engineering and discriminating selection of materials permit. For full information, send for our new catalog.

WALKER-TURNER COMPANY, INC.
111 Berckman Street, Plainfield, N. J.

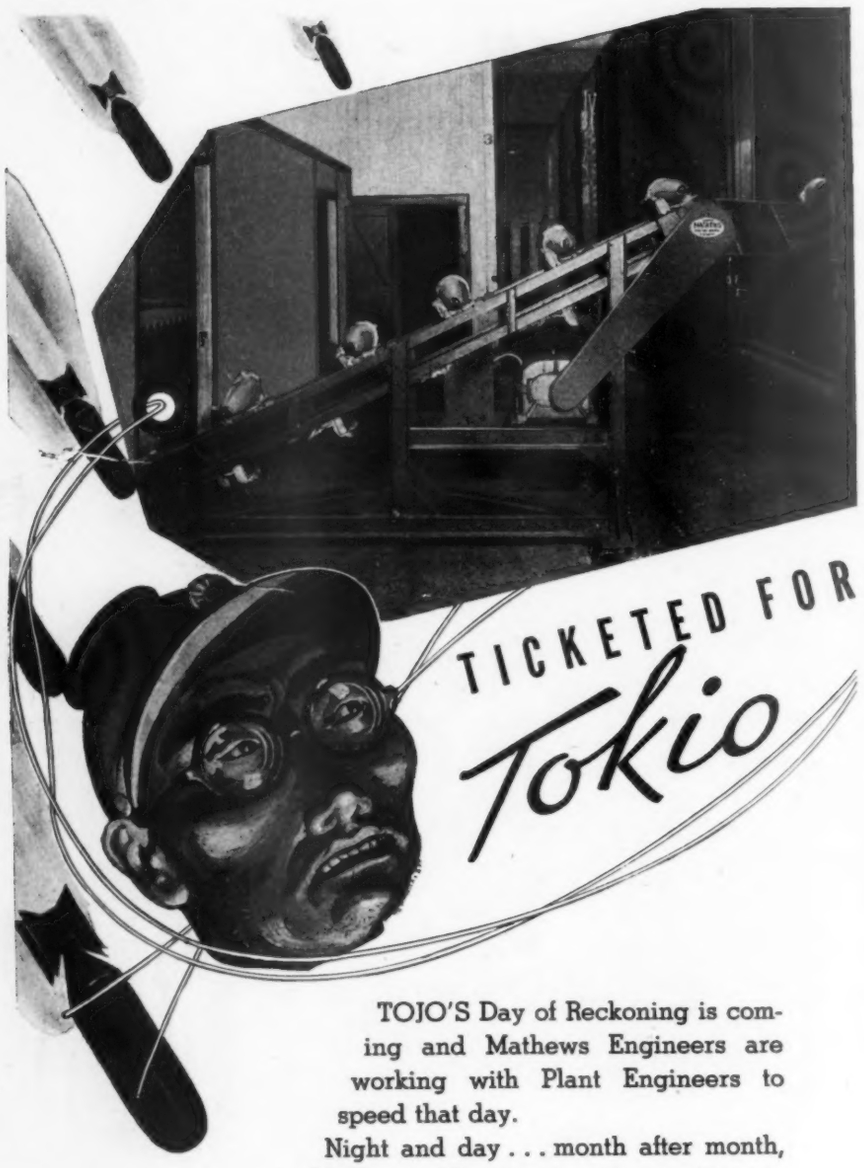
WALKER-TURNER RADIAL DRILL

Drills to center of 62" circle. Head tilts to 45° in either direction. Spindle speeds 160 to 8200 r.p.m. Weight 500 lbs.

walker-turner COMPANY, INC. PLAINFIELD, N.J. U.S.A.

MACHINE TOOLS

DRILL PRESSES — HAND AND POWER FEED • RADIAL DRILLS
METAL-CUTTING BAND SAWS • POLISHING LATHES • FLEXIBLE SHAFT MACHINES
RADIAL CUT-OFF MACHINES FOR METAL • MOTORS • BELT & DISC SURFACERS

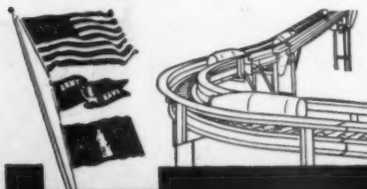


TOJO'S Day of Reckoning is coming and Mathews Engineers are working with Plant Engineers to speed that day.

Night and day . . . month after month, Mathews Conveyers are moving an endless procession of bombs, shells, cartridge cases, and vital plane parts, many of them destined to make it warm in Tokio.

If your production depends on precision movement of materials and supplies, a Mathews Time-Coordinated Conveyer System is a sure means of speeding operations all along the line. A Mathews Engineer will gladly consult with you on your problem.

MATHEWS CONVEYERS FOR MECHANIZED PRODUCTION



If you are manufacturing war material, or anything vital to the success of the war effort, you can get Mathews Conveyers to handle that material. Rely as usual on your Mathews Engineer.

MATHEWS CONVEYER COMPANY ELLWOOD CITY PENNSYLVANIA

(Continued from page 208)

ture of metal keys for opening cans, except as may be required for military purposes, is prohibited.

8. A clarification in the amendment states that cans for home-canned foods, or foods produced for non-commercial purposes, may not be obtained for such foods if they are later to be sold and repacked in a different form or package.

9. Use of fibre or paper-bodied cans with ends made of waste metal is permitted without restriction for packing dental plastics, dentifrice powders, insect and rodent poisons, seed disinfectants and seed inoculants, caulking compound, cements, and photographic chemicals. Previously, such use was prohibited.

10. Exemptions to M-81 for the armed forces and other specified Government agencies are amended to make it clear that these exemptions apply only to cans which are delivered, either packed or empty, to such agencies. Delivery is subject to an approved letter of intended delivery, or to a purchase order or contract with these agencies. Previously, some persons have felt that they could obtain cans for shipping a product used as a supply by a manufacturer simply because the manufacturer held a military contract.

11. Cans for packing any food or non-food product not listed on Schedule 1 or 2 are exempted from M-81 for the first time if the cans are required for packing a product for delivery to a ship chandler, marine distributor or marine operator. However, the product must be for maintenance, repair and operating supplies for a vessel. Application for authorization to purchase the cans must be filed on Form PD-300, with the Containers Division, WPB, Washington, D. C. Ref: M-81.

* * *

PREFERENCE RATINGS ON PRODUCTS FOR RESALE

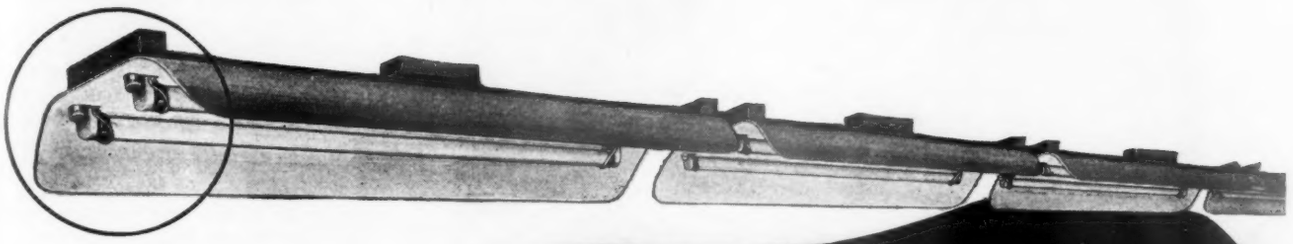
Manufacturers, permitted to use preference ratings assigned authorized production schedules to obtain products to round out a line, may not use their ratings indiscriminately to compel suppliers to furnish them with products for resale which they normally are able to produce themselves. This point was brought out by the Controlled Materials Plan Division of the War Production Board in Interpretation 2 to CMP Regulation No. 3.

The applicable provision of the regulation is intended to permit a manufacturer to acquire resale items to round out a line which he normally sells as his own product in accordance with customary trade practices.

Examples of cases of rounding out a line are: (1) acquisition of repair parts or special accessories for the product being manufactured; (2) acquisition of articles necessary to complete a "kit" or "package" which is sold as such and thereby becomes the "product" of the manufacturer, such as goggles and gloves sold with welding equipment; and (3) acquisition of articles necessary to fill out a specific line or type of product such as

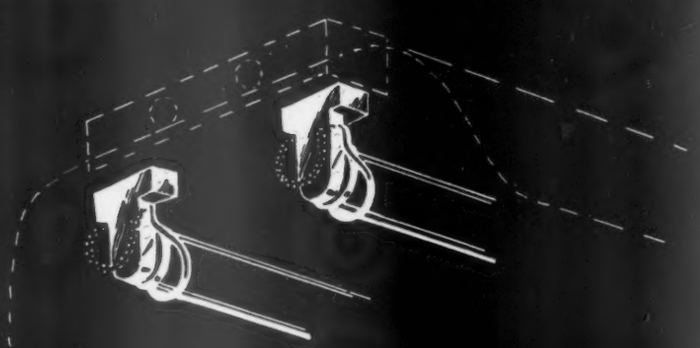
(Continued on page 214)

MILLER DOES IT AGAIN!



...with a patented SAFETY LAMP LOCK which prevents lamps from falling!

STUDY CAREFULLY *the details of the MILLER patented Safety Lamp Lock as shown at the right. It is an integral part of each socket—prevents lamps from falling.*



There are several highly significant features of the new MILLER Aero-Designed fluorescent fixture, and its compliance with WPB regulations limiting the use of steel.

Of all features, none is more noteworthy than the MILLER Safety Lamp Lock. The vital spots where it gets in its good work are shown in the circled sockets in the continuous run of fixtures at the top of the page, with the details diagramed immediately above.

It is an extremely important feature to you . . . because it minimizes the risk of lamps falling from sockets. Fool-proof under all conditions, it can mean the saving of time and money in your busy plant . . . yes, the prevention of dangerous accidents, too.

This Safety Lamp Lock is *exclusive* with MILLER. It's a product detail that undoubtedly is one of the best available demonstrations of the constant alertness of MILLER lighting engineers in your interest. It's your best reason for calling in a MILLER field engineer (located in principal cities) today, to talk more about this Aero-Designed fluorescent lighting, and how it can help you.

Other Noteworthy features

FLANGED TOP CHANNEL *simplifies installation—saves labor.*

"EXTRA LENGTH" REFLECTORS—*shield lamp ends—of sturdy Masonite with reinforcing attachment straps.*

IVANITE *the "sealed-in-surface" finish—durable, easy to clean, high reflection factor.*

STREAMLINED—*completely wired channel with exposed ballast for heat dissipation.*

THE MILLER COMPANY • MERIDEN, CONNECTICUT

ILLUMINATING DIVISION
Fluorescent, Incandescent
Mercury Lighting Equipment

OIL GOODS DIVISION
Domestic Oil Burners
and Liquid Fuel Devices

ROLLING MILL DIVISION
Phosphor Bronze and Brass
in Sheets, Strips and Rolls

WAR CONTRACTS DIVISION
War Material

MILLER
SINCE 1844

POST

New "HARD-PENCIL" CLOTH
MAKES CLEAN SHARP DRAWINGS

Draftsmen like to work on WHITE-X! Its fine tooth takes hard pencil lines jet black — as opaque as blackout curtains — on its velvety white surface — yet erasures are easily made. WHITE-X has a glass-like transparency, dust repellent high-gloss back and is moisture resistant. Prints made from WHITE-X pencil sketches are etching sharp. Try it today, and see for yourself.

Write or phone our Chicago office or your nearest Post dealer for Free sample of White-X. Fine tracing media and sensitized papers are ready for immediate delivery.

The Frederick Post Co.
Phone KEYSTONE 7000 · CHICAGO

(Continued from page 212)

sets of wrenches where the manufacturer produces some of the sizes in the set, but purchases the remaining sizes to complete the set.

This ruling, which is contained in Interpretation No. 2 of CMP Regulation No. 3, clearly indicates that the provision permitting a manufacturer to acquire items for resale up to 10 percent of his total sales, may not be used by persons operating service repair shops or similar enterprises which do not manufacture products for sale. In such instances, the person desiring to acquire materials to round a line must do so as a distributor with respect to the entire quantity. This also holds true with respect to manufacturers who desire to obtain materials exceeding 10 percent of sales to round out a line.

In illustration of this general rule, assume that a manufacturer's authorized production schedule permits him to manufacture electric motors having a value of $10,000. He may apply the preference rating assigned to the schedule to obtain all materials and components incorporated in motors produced by him under his schedule and, in addition, he may purchase up to $1,000 worth of finished parts to be sold separately as repair parts for such motors. If the manufacturer desires to purchase $2,000 worth of such repair parts, he may not acquire any of them with the rating assigned to his authorized production schedule.

* * *

FREIGHT REDUCTIONS TO BE REFLECTED IN CEILING PRICES ON MACHINERY

Freight rate reductions made effective May 15, 1943, by the Interstate Commerce Commission will be reflected in reduced ceiling prices for certain formula-priced items of machinery, machinery parts, farm equipment and ferrous forgings, the Office of Price Administration announces.

Affected by today's action are machines and parts without list prices, ferrous forgings without list prices and special new farm equipment which was not manufactured or sold prior to March 31, 1942, or which was completely redesigned since that date, or farm equipment for which the manufacturer had no price in effect on March 31, 1942, because of the manufacturer's custom to issue season prices after that date.

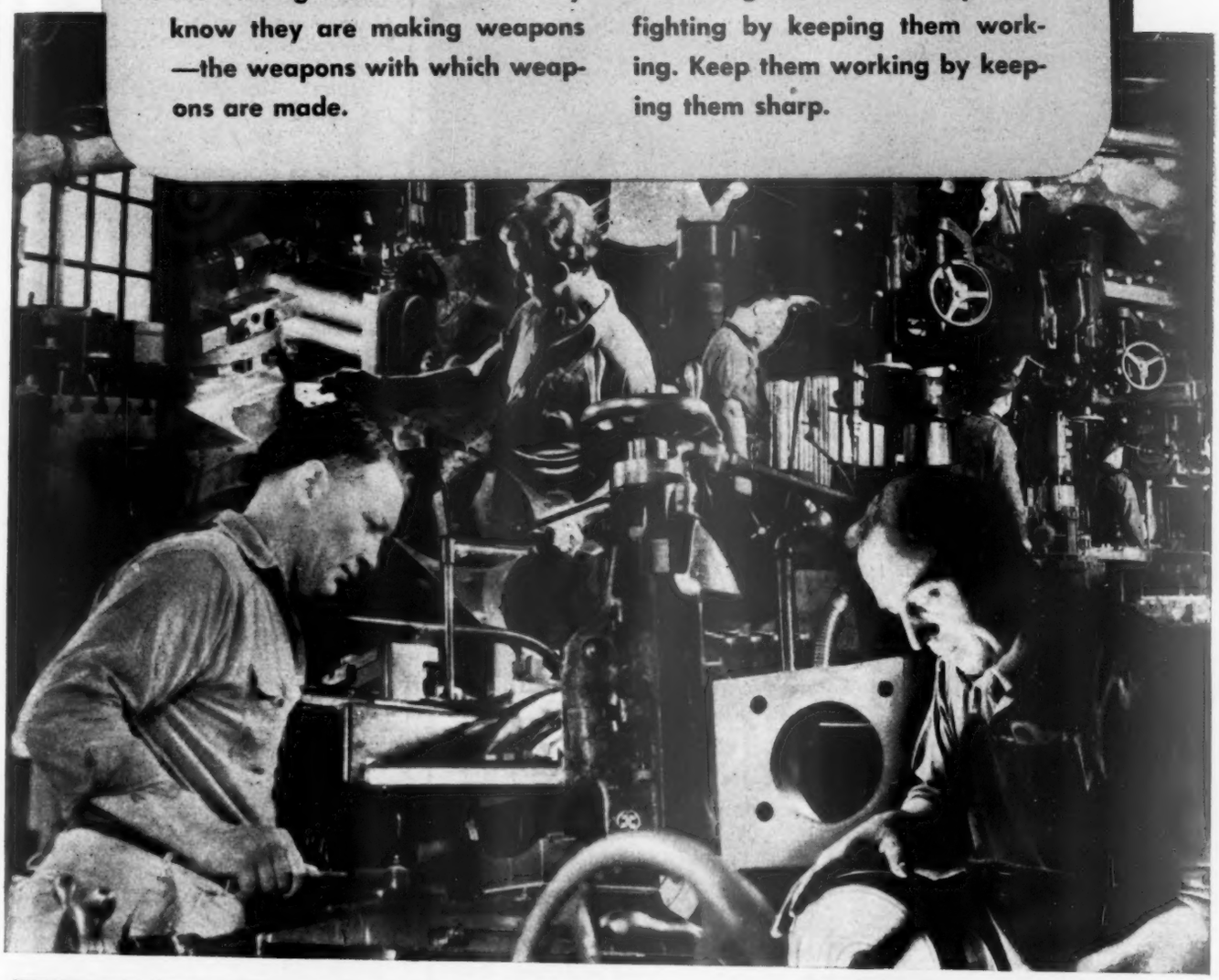
Items covered by the action are subject to maximum prices determined by special pricing methods and formulas contained in applicable regulations. In each of these formulas, one of the factors which could be included in determining the ceiling price was the freight rate in effect on March 31, 1942. Since the March 31, 1942, freight rate reflected the six per cent increase in freight rates allowed last year by ICC and is higher than the May 15, 1943, rate which restores March 18, 1942 rates, today's action provides that the reduction which was ordered by ICC after OPA petitioned for it be reflecting in ceiling prices. This will apply to sales after the effective date of the

(Continued on page 216)

WEAPONS OF CONSTRUCTION!

The craftsmen making National cutting tools today know that they are making more than tools. They know they are making weapons —the weapons with which weapons are made.

In your hands these tools deserve the same care and attention that a soldier gives his rifle. Keep them fighting by keeping them working. Keep them working by keeping them sharp.



NATIONAL

NATIONAL TWIST DRILL & TOOL CO. DETROIT U.S.A.

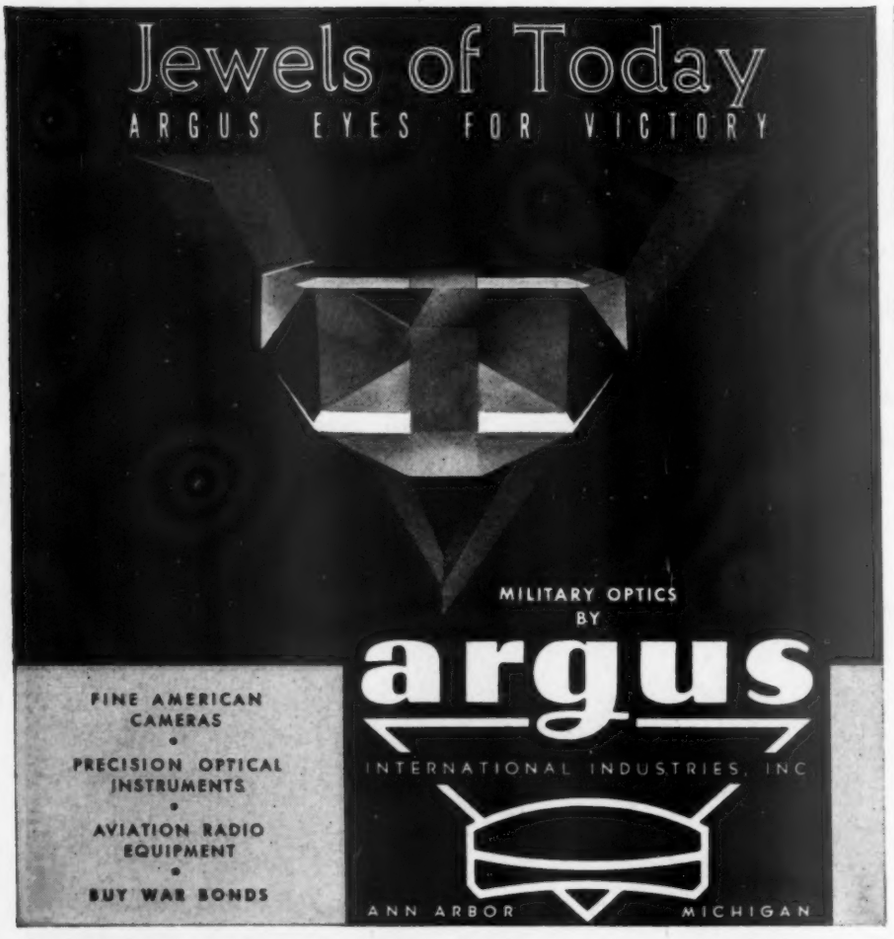
TWIST DRILLS
REAMERS, HOBS
MILLING CUTTERS
COUNTERBORES
SPECIAL TOOLS

TWIST DRILL AND TOOL COMPANY

HOME OFFICE AND FACTORY—DETROIT, MICH.

Tap and Die Division—Winter Brothers Co., Wrentham, Mass.

Factory Branches • New York • Chicago • Cleveland • San Francisco • Distributors in Principal Cities

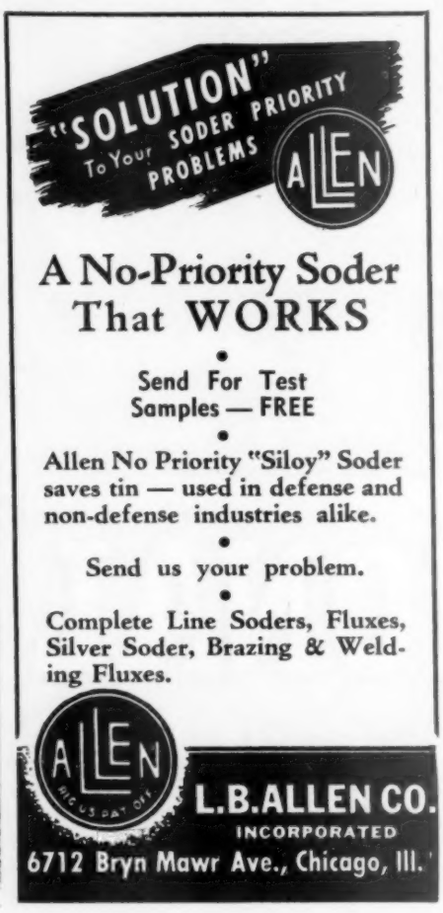


● Avoidable casualties among your factory soldiers delay Victory out on our fighting lines — it's a war duty to protect employees' hands from acid burns and dermatitis. Stanzoil Gloves of DuPont's miracle neoprene resist damage by oils and corrosive elements, give positive protection, often outlast rubber 3 to 7 times. Write now for all the facts.

Synthetic Rubber Division
THE PIONEER RUBBER CO.
257 Tiffin Rd., Willard, O., U. S. A.
New York • Los Angeles

STANZOIL by PIONEER

MADE WITH DU PONT NEOPRENE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Allen No Priority "Siloy" Soder saves tin — used in defense and non-defense industries alike.
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ALLEN
L.B.ALLEN CO.
INCORPORATED
6712 Bryn Mawr Ave., Chicago, Ill.

(Continued from page 214)

amendment of both items which have been priced under the particular formulas in the past and those to be priced under them for the first time in the future.

Specifically the action provides that manufacturers of the items covered by this action, and also sellers subject to Maximum Price Regulation 136, other than manufacturers, shall use the freight rates in effect on March 31, 1942, or current freight rates, whichever are lower.

The action was contained in Amendment No. 90 to Maximum Price Regulation 136 (Machines and Parts and Machinery Services), Amendment No. 6 to Maximum Price Regulation 246 (Manufacturers and Wholesale Prices for Farm Equipment), Amendment No. 2 to Maximum Price Regulation 351 (Ferrous Forgings). The amendments were effective June 14, 1943.

WAR HOUSING FURNITURE HAS PREFERRED STATUS

Furniture for war workers in housing units furnished by the Federal Public Housing Authority is accorded the same preferred status as furniture purchased for the Army, Navy, Maritime Commission and War Shipping Administration —by General Limitation Order L-260 as amended by the War Production Board. The FPHA, a branch of the Federal Housing Administration, has been added to the other agencies exempted from L-260 provisions.

The possibility of further simplification of furniture and reduction in numbers of patterns, rather than standardization, is being studied by the Furniture Section of WPB in cooperation with the industry.

CHLORATE CHEMICALS ALLOCATIONS PUT ON QUARTERLY BASIS

In order to simplify procedure and eliminate paper work for the industry and the War Production Board, allocations of chlorate chemicals have been changed from a monthly to a quarterly basis by the War Production Board through issuance of General Preference Order M-171 as amended.

As a further step in simplification of procedure, the amended order provides for use of Form PD-602 by producers and distributors in making applications for allocation. Formerly producers and distributors were required to schedule proposed deliveries on Form PD-515 and customers were required to apply on Form PD-516 for permission to accept delivery of chlorate chemicals. Hereafter a producer or distributor filing Form PD-602 will obtain necessary information on primary product and end use from certificates filed with him by customers. Customers need not file any forms with WPB.

In addition to military purposes, chlorate chemicals are used in matches, carbon removing compounds, fumigants and disinfectants, heat pads, metal refining and alloying, dyes, pharmaceutical prepar-

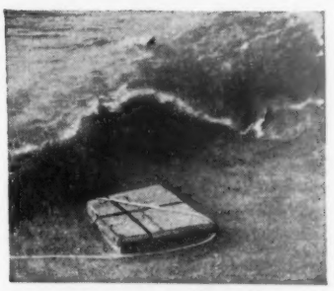
(Continued on page 218)

GAIR BOXES DELIVER

Blood Plasma, Packed in Paperboard Cases
Acme

TO OUR FIGHTING FRONTS

Plasma, bullets, bandages or food—these may spell the difference between life and death, victory or defeat for our fighting men. The containers that carry them to their far-flung destinations must be worthy of the responsibility. Gair containers have proven their worth on all fronts, all types of terrain, in all climes and temperatures. Supplies packaged by Gair arrive whole, dry, and perfect, ready to do their job in bringing victory closer.



Write for booklet *showing photographic record of ocean submersion tests made by Gair to meet U. S. Quartermaster Specification No. OQMG-93, Navy Specification 53B11. Complies with Lend-Lease Specification FSC-1742-B and Ordnance Specification FXS-511.*

Robert Gair Company, Inc., New York—Toronto.

FOLDING CARTONS • BOXBOARDS • FIBRE & CORRUGATED SHIPPING CONTAINERS

THE "MAKE" OF HACKSAWS IS DOUBLY IMPORTANT NOW!

Make all the comparative cutting tests and check-ups you wish — if you have the time. Starrett Blades will come through with flying colors.

But if you must have fast cutting, long lasting blades right along and no fooling, it's an awfully good idea to stick to blades that carry a name like STARRETT. They've got a reputation to uphold that dates a long way back and looks a long way ahead . . . *STARRETT makes the right blade for the job* — Standard Steel for hand sawing, S-M Molybdenum for fast cutting and long life on both power and hand work, High Speed Steel for power sawing of extra hard alloy steels . . . Ask your mill supply distributor for STARRETT Hacksaws.

. . . and that goes for BANDSAWS, too!

The name STARRETT has equal significance when you need unquestioned performance from Metal Cutting Bandsaws. Starrett hard edge, flexible back Bandsaws are made in 12 widths (3/32" to 1"), 3 gauges and 8 pitches — in coils of any length or cut to length and welded.
Ask your mill supply distributor for STARRETT Bandsaws.

THE L. S. STARRETT CO. ATHOL. MASSACHUSETTS. U.S.A.

World's Greatest Toolmakers

STARRETT

PRECISION TOOLS • DIAL INDICATORS • GROUND FLAT STOCK
HACKSAWS • METAL CUTTING BANDSAWS • STEEL TAPES

(Continued from page 219)

ations, textiles, weed killer and in a number of chemical processes.

Specific authorization from WPB will not be required for the delivery by any supplier to any person in any calendar quarter of not more than 25 pounds of any chlorate chemical.

Producers and distributors need not list individually any orders calling for 250 pounds or less. Such orders can be lumped into an aggregate amount for each use on Form PD-602. Purchasers requesting more than 250 pounds per quarter must be listed individually.

A supplier may deliver chlorate chemicals to any ultimate consumer for use as a weed killer without receiving certification, provided that such consumer holds a United States explosive license issued by the Bureau of Mines of the Department of Interior.

Chlorate chemicals are defined in the order as potassium chlorate, sodium chlorate, barium chlorate, potassium perchlorate, ammonium perchlorate, perchloric acid and any other chlorate or perchlorate chemical.

AMENDMENT NO. 1 TO CMP REGULATION NO. 8

CMP Regulation No. 8, covering production requirements of controlled materials producers, has been amended to indicate that in some instances, where a controlled material producer requires the same basic material as that which he produces to fabricate another form of controlled material, such material may be made available through the allotment procedure rather than by directive.

The regulation originally indicated that all such material would be made available to controlled material producers only through directives. However, in some instances the allotment procedure is more adaptable to certain circumstances. The action is taken by Amendment 1 to CMP Regulation No. 8 which deletes subparagraph (4) of paragraph (c) of the regulation.

STEEL SHIPPING DRUMS PREFERENCE RATING REQUIRED

Users of new steel shipping drums were advised by the Containers Division, War Production Board, of the correct procedure in obtaining a preference rating which is required prior to submitting application on Form PD-835 for authorization to purchase new steel shipping containers.

Under Conservation Order M-255 (New Steel Shipping Drums), WPB allocates shipments of new steel shipping drums by manufacturers. However, a preference rating must be assigned before the Containers Division can authorize users to purchase the containers.

Preference ratings for drums to be used by the armed forces or other specified Government agencies are assigned by these agencies.

Users who now have a preference rating should make application for auth-

(Continued on page 220)

70 hour sentence in the world's hottest jail!...

We are America's largest builder of prison equipment.

But since 1939 we've been making armor plate for aircraft, tanks and guns.

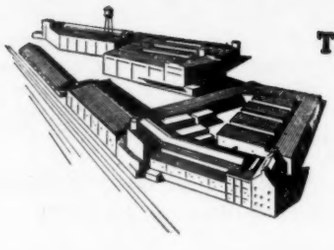
That's where our expert steel fabricating techniques come in handy!

We have to our credit some of the most impregnable metal designs and construction ever developed.

One of our specialties is heat treatment. When we "sentence" steel plates to 70 hours in the "world's hottest jail," we know they will come out the toughest, most protective armor plate that man ever has devised. And you can bet our boys at the front have found that out!

What we have learned as masters of metal fabrication during the past 65 years . . . and what we are learning with each new day . . . is preparing us for an unusually broad and capable service to industry tomorrow.

Our force of metal-working engineers and designers can help you plan the use of better welded, better heat-treated and better machined metals for the markets of the future. We invite your inquiry.



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If you are out to save time and material- use

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CONVENIENCE: ELEK-TRO-CUT THREE-M-ITE CLOTH UTILITY ROLLS are the handiest abrasive in the plant for countless sanding and grinding jobs. Furnished in 1", 1½" and 2" widths, it provides strips of the correct size, without frayed edges, waste material or lost time. The tough, flexible cloth backing and fast-cutting Aluminum Oxide mineral gives faster finishing and longer wear.

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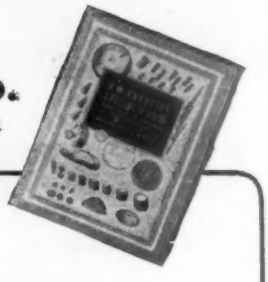
FASTER CUT: THREE-M-ITE FIBRE COMBINATION DISCS are built to stand up under the demands of wartime production. These tough, long lasting discs turn out more work and better work, day in and day out. On continuous high speed jobs, they give finer finished work and hold their keen cutting surface longer.

For more information on these and other time-saving 3-M Abrasive Specialty Items, send for a copy of our FREE booklet.



MINNESOTA MINING & MFG. CO.
Saint Paul, Minnesota

Gentlemen:
Kindly send your booklet "3-M ABRASIVE SPECIALTY ITEMS."
Name .....
Company .....
Address .....
City ..... State ..... P 743

(Continued from page 218)

orization to purchase new steel drums on Form PD-835.

A user not operating under CMP or PRP, who does not yet have a preference rating assigned, must first obtain such rating on Form PD-25F or Form CMP-4-b. After receiving the preference rating, he should apply for authority to purchase new steel shipping drums on Form PD-835.

A user operating under CMP or PRP, who does not yet have a preference rating assigned, must file for such rating on Form PD-1-a.

Forms PD-25F or CMP-4-B should be addressed to the WPB in Washington, D. C.

Form PD-1A should be filed with the local Field Office of WPB. If the amount involves $500 or more, Forms PD-1A and PD-835 should be filed simultaneously, thereby saving the time required to obtain preference ratings and purchase authorizations separately.

Limitation Order L-197 (Steel Drums) prohibits the use of new steel drums for certain products. Therefore, application for preference ratings or purchase authorizations should not be filed for drums for prohibited products, unless an exemption from that order has been specifically authorized by WPB.

QUESTIONS AND ANSWERS GEN. SCHEDULING ORDER M-293

General Scheduling Order M-293, issued on February 26, 1943, has been the subject of numerous inquiries directed to the War Production Board. To clarify the operation of this order, WPB has prepared answers to the questions most frequently asked in connection with the administration of the order.

The questions and answers follow:

1. Q. When no form number appears in the appendix opposite a given component, is it assumed that no schedule is to be filed by manufacturers of said component until the order has been amended to show a form number in the appropriate column?

A. Yes. However, the War Production Board may by special direction under subparagraph (e) of Order M-293 direct all or part of an industry to file a report.

2. Q. In the event that no form number appears in the appendix opposite a given component, does this mean that the component is not covered by the terms of Order M-293?

A. No. The component is subject to the terms of subparagraph (e) of Order M-239 and also the manufacturers may be directed to report as described in Question 1.

3. Q. When the manufacturer of a Class X component files his proposed delivery schedule, may he at once proceed to make deliveries in accordance with this schedule until advised to the contrary?

A. Yes.

4. Q. In the event that a manufacturer

(Continued on page 222)

Picture of a Fellow About to Lose His Shirt

And pants, too. In fact, his entire tough hide is destined to serve American industry. The best parts largely will be made into Leather Belting, the most efficient of all mechanical power transmission mediums.

Leather Belting delivers more power at lower maintenance cost than any other material. Its inherent characteristics — greater gripping power, flexibility, tensile strength and longer life — plus the craftsmanship of the tanner, currier and belt maker, place Leather Belting at the top of the power transmission list. Furthermore, it is the one material that, even after years of service, has a worthwhile salvage value.

Consult your own Leather Belting manufacturer. **Whatever your power transmission problems, you can rely on his specifications to meet your needs exactly. He will deliver on schedule too,** ***since leather is available for belting.***

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Left: Standard hard edge hand blade. *Center:* High speed moly power blade. *Right:* High speed moly hand blade, with hard edge for tough cutting.

On hand or power jobs, Red End Blades give top production, smoothest cutting, longest life. Your new workers will find them easier and far less tiring to use on hand jobs. For every blade is Simonds-controlled from test tubes to package . . . made to Simonds' own standards in the world's most self-contained plant . . . where high-speed production keeps deliveries in step with rated orders. So send yours *now* to the nearest Simonds office.

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Send for FREE BOOKLET which tells your workers how to use and care for hacksaws, bandsaws and files

SIMONDS

Famous Family of Metal-Cutting Tools

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(Continued from page 220)

of Class X components is unable to live up to his delivery schedule as filed because of unexpected delays, should he report this situation at once to his industry division or wait until he is again requested to file a new proposed schedule?

A. He should report the situation as promptly as practical.

5. Q. In the event that a manufacturer of Class X component can build out of inventory a component which will not interfere with the delivery schedule which he filed, may he do so without first notifying his industry division?

A. *No. He must report the matter to his industry division as described in Question 4 above and make no deliveries which differ from his schedule as filed until so authorized by the WPB.*

6. Q. In the event that a manufacturer of a Class X component, after filing his delivery schedule, discovers that the material necessary to complete certain orders will not be available but that the material for filling other orders which were not reported on his delivery schedule is available, may he proceed at once to fill the latter orders?

A. No. He must first report the matter to his industry division as explained in Question 4 above and take no action which will differ from his delivery schedule as filed until so authorized by the War Production Board. In the event that time is of the essence, he should report to his industry division by telephone so as not to lose time in production.

7. Q. In the event that a company operates a number of plants producing the same Class X component, should it file a separate report for each plant or is one consolidated report sufficient?

A. If the facilities of the various plants are interchangeable and the component produced in each is the same, one consolidated report is sufficient.

Changes in Schedule

8. Q. In the event that a manufacturer is instructed by the War Production Board to make certain changes in his delivery schedule as submitted and he finds it impossible to make these changes, what procedure should he follow?

A. He should communicate with his industry division, pointing out the reasons why he is unable to comply with the changed schedule.

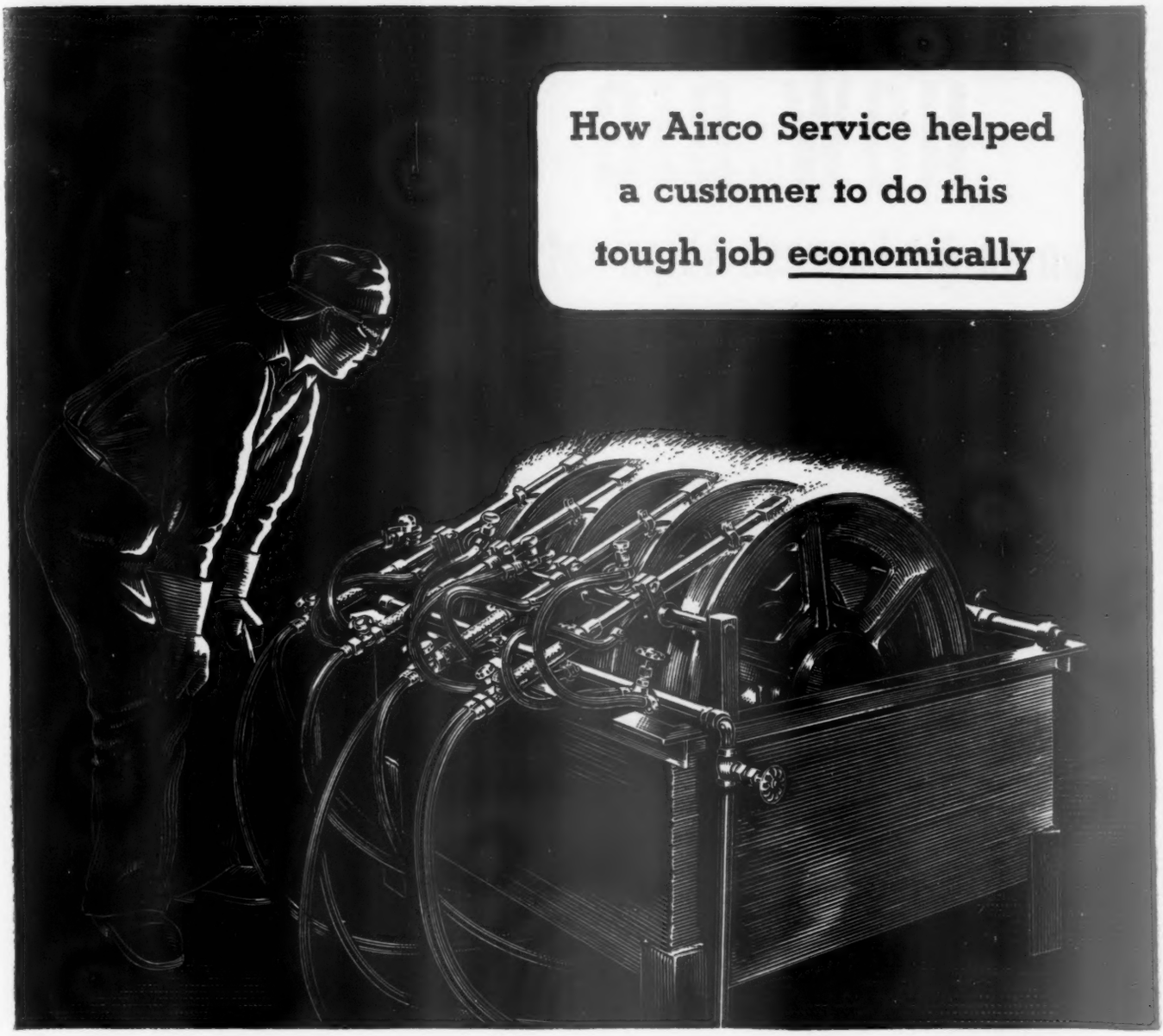
9. Q. When a manufacturer reports his production capacity as called for in Order M-293 in terms of units such as internal combustion engines, should he take into consideration the demand placed upon him for the production of spares and replacement parts?

A. Yes.

10. Q. What is the relationship between the scheduling under M-293 and the Controlled Materials Plan?

A. The Controlled Materials Plan flows materials to manufacturers based on programs which have been approved by the Requirements Committee of the War Production Board and which in their entirety

(Continued on page 224)



THE Brewster Company, Shreveport, Louisiana, had an unusual production problem. Specifications on a large order for drilling equipment called for one of the products—cable sheaves—to be flame hardened in the cable grooves.

This contract requirement raised three difficulties—hardening had to be limited to the grooves; a means of handling the difficult shapes had to be found; and the job had to be done quickly, efficiently, and economically.

Standard methods were not practicable in this case. This is why the Brewster Company called in Air Reduction engineering specialists to help work out a special production set-up. The result was an unusual but simple fixture designed and built by the Air Reduction men. This effective production jig enabled the manufacturer to meet his specifications and schedules, and at the same time save considerable expense.

This case is typical of many frequent occasions where Air Reduction's specialized "know how"—teamed with a customer's manufacturing skill—has successfully overcome troublesome production problems. This same constructive engineering assistance is available without charge to every user of Air Reduction products.

If you have a problem involving some use of the oxyacetylene flame and electric arc, Air Reduction's engineering and research personnel will be glad to help you. For further information write your nearest Air Reduction office.

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HOW BIG

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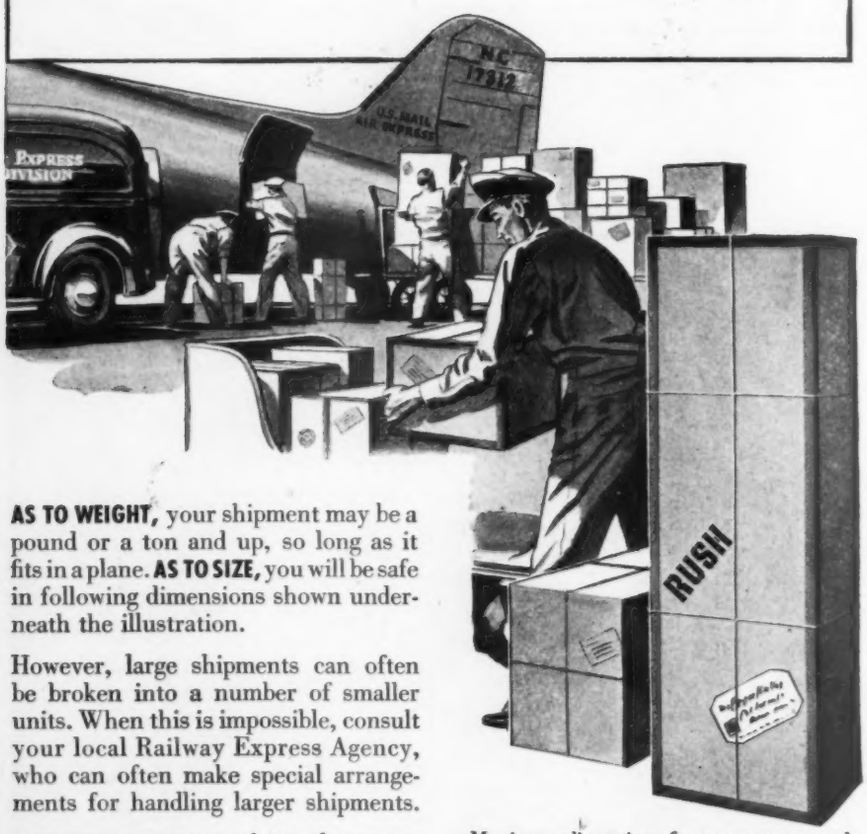

AS TO WEIGHT, your shipment may be a pound or a ton and up, so long as it fits in a plane. **AS TO SIZE,** you will be safe in following dimensions shown underneath the illustration.

However, large shipments can often be broken into a number of smaller units. When this is impossible, consult your local Railway Express Agency, who can often make special arrangements for handling larger shipments.

FOR FASTEST DELIVERY, ship early, as soon as package is ready. PACK COMPACTLY but securely, to cut AIR EXPRESS costs.

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WRITE for our quick-reference handbook on "How to Ship by AIR EXPRESS During Wartime." Dept. PR-2, Railway Express Agency, 230 Park Avenue, N.Y. C.

(Continued from page 222)

fall within the country's capacity to produce the materials. Such programming and flowing of materials must take place in many instances before specific orders are placed with manufacturers for specific components to be delivered at specific times. Scheduling under Order M-293 operates to schedule deliveries of orders for specific critical components. If these orders are for components which enter into approved programs and are in balance quantitatively with the programs, manufacturers' material allotment should be in balance with his material requirements for filling the orders. In the event that insufficient materials have been allotted him to produce the components in question, he should refer the matter to his industry division for action.

11. Q. For what length of time does the proposed delivery schedule submitted by a Class X component manufacturer stay in effect or remain frozen?

A. For the period specified in the instructions accompanying the schedule form.

Delayed Deliveries

12. Q. In the event that a manufacturer of Class X components is instructed by his customer to delay delivery on an order beyond the time originally stated in his proposed delivery schedule, may the manufacturer follow this instruction without reporting to his industry division?

A. No. He should report the situation as described in Question 4 and make no change from his delivery schedule as filed until so instructed by the WPB.

13. Q. Should a manufacturer of Class X components follow his usual practice in preparing his delivery schedule or are there additional factors which he must take into consideration in filing this schedule?

A. Manufacturers should arrange their schedules in accordance with the preference established by the applicable ratings, including directives as required by the Priorities Regulations except that when the War Production Board has directed an order of precedence under Order M-293, that order of precedence shall be followed by the manufacturer in making up his schedule until he is otherwise directed by the WPB.

14. Q. In the event that WPB allocates orders placed with one manufacturer to another manufacturer, what will be the procedure for price adjustment if the latter manufacturer's price is higher than the former's?

A. This is a matter to be resolved between the manufacturer to whom the order is allotted and his customer.

15. Q. What is meant by scheduling of a Class X component under Order M-293?

A. Order M-293 requires manufacturers of Class X components to file their proposed delivery schedules with the War Production Board. Such manufacturers should schedule their production in such

(Continued on page 227)

Serving and Conserving —

DOING *TWO* VITAL WAR JOBS . . . RUSTLESS is proud that it has the facilities and the "know-how" to do two war jobs of singular importance.

First, we are producing more Stainless Steels than any other plant in the nation. That is because we are the only plant whose entire resources are devoted to making this one, vital, strategic material and nothing else. Already Stainless Steel's exceptional properties of high tensile strength and remarkable resistance to corrosion by heat, acid and rust have made it a must in the production of the most vital war equipment.

Second, the unique **RUSTLESS** processes are conserving two metals that are critically scarce. These metals . . . Chromium and electrolytic Nickel . . . are essential, not only for the manufacture of Stainless Steel but for many other war requirements as well. **RUSTLESS** has largely "by-passed" their use by the discovery of ways to achieve equal results through the use direct in the furnace of ores and through the recovery of stainless steel scrap, both of which are in ample supply.

Thus, **RUSTLESS** is both *Serving* and *Conserving;* two jobs that we will continue to do with all our might and with all our resources throughout the war and in preparation for the peace to come.

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There are three forces constantly at work to destroy wire rope in use,—(1) wear, (2) fatigue and (3) corrosion. The use of LUBRIPLATE 130-AA as a wire rope lubricant has proven so effective in combatting them that rope manufacturers are recommending it for the toughest rope jobs.

LUBRIPLATE 130-AA has enormous film strength and adhesiveness. Hence it is not squeezed out under the terrific wire rope internal pressures. It is impervious to water, moisture and most industrial fumes. LUBRIPLATE therefore prevents rust and corrosion. By doing a better lubrication job LUBRIPLATE permits the strands and wire to work with minimum friction which materially reduces one of the causes of wire fatigue.

These claims for LUBRIPLATE are backed up by unsolicited testimonials of wire rope users who say that it has licked their wire rope problem. LUBRIPLATE lubricants range from the lightest oils to the heaviest greases. Each is an outstanding lubricant that will do a specific job better. Let us send you facts and figures about LUBRIPLATE lubricants. Write today.

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NEWARK, N. J. SINCE 1870 TOLEDO, O.
WRITE FOR THE NAME OF THE DEALER NEAR YOU

(Continued from page 224)

a way as to make certain the deliveries as reported to WPB. The War Production Board may change the delivery schedule as submitted, but before so doing it will in all cases consult with the manufacturer to be certain that such changes will not create an impractical situation in his production.

16. Q. In the event that a manufacturer of Class X components files his delivery schedule with the War Production Board and receives no further instructions, should he proceed to make deliveries on the basis of the schedule as filed?

A. Yes. He shall proceed on the basis of the request as filed.

17. Q. Most manufacturers of Class X components purchase sub-assemblies from other manufacturers and such sub-assemblies become a part of the components to be delivered according to the schedule as filed. When such delivery schedule is approved, does this give the manufacturer the authority to pass it on as a frozen schedule to the plant from whom he will receive the sub-assembly?

A. No. The manufacturer in question should take all reasonable means to see that he receives his sub-assembly in time to comply with his delivery schedule as approved, but he is not authorized to place a frozen schedule on his subcontractor.

18. Q. It is understood that a customer of a manufacturer of Class X components may not change the delivery of his orders from that stated on the approved delivery schedule unless the manufacturer is so instructed by the War Production Board. Does this mean that a purchaser may not change the shipping instruction or destination on his order?

A. No. A purchaser may change the destination on his order without first receiving the approval of the War Production Board.

19. Q. May the industry division review the proposed delivery schedule of a manufacturer of Class X components at the manufacturer's plant rather than force him to file a report in Washington?

A. No.

20. Q. When the manufacturer of a critical common component subcontracts the building of a sub-assembly to another manufacturer, does the second manufacturer come within the terms of M-293?

A. Only in the event that the sub-assembly is in itself a critical common component as listed in the appendix to Order M-293.

21. Q. In the event that a manufacturer of a Class X component produces certain standardized shelf items and certain other items which are custom built, may the industry division require him to report only the orders for the custom built items?

A. Yes, by so stating in the instructions which accompany the reporting form.

22. Q. How can a manufacturer of a Class X component identify the end use

(Continued on page 228)

Yes

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No holding up vital jobs while you wait for your grinding wheels or mounted wheels.* Timing and scheduling are everything now. That's why our streamlined QUICK SERVICE is such an important asset.

Fully approved and endorsed by W P B, here's our wartime speed setup:

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CHICAGO WHEEL & MFG. CO.

118 S. Aberdeen St. Chicago, Ill.

*Half a century of specialization has established our reputation as the Small Wheel People of the Abrasive Industry. You can bank on us.

Send Catalog. 113-7

Interested in
☐ Grinding Wheels
☐ Mounted Wheels
☐ Send Test Wheel

Name .....

Address .....

"WAR-AID"

Fluorescent Fixtures *by Wheeler...*

Sturdy metal-conserving wiring channel. Non-metallic reflector with chip-proof washable surfaces. Made for 2 or 3 40-watt lamps, or 2 100-watt lamps. Easily adapted for continuous runs.

- maintain "skilled lighting" standards
- conserve critical materials

OTHER WHEELER FIXTURES

RLM One-Piece Solid Neck Reflectors

Made in Dome, Angle and all other standard types. For indoor or outdoor use.

Class II-G Dust-Tight Units

Fluorescent fixtures approved for "Class II-G" hazardous locations. Hinged cover protects lamps, sockets and reflecting surfaces. Made for two or three 40-watt lamps.

IT takes accurate "seeing" by workers to maintain today's precision standards of production. In any warplant, that means lighting of the most modern, efficient type.

To make such lighting available *in spite of wartime metal shortages*, Wheeler Reflector Company developed "War-Aid" RLM Fluorescent Fixtures. Made with minimum strategic materials... designed with "know how" gained in over 60 years of specialized experience... "War-Aid" Fixtures offer the same high-efficiency illumination that has always typified Wheeler "Skilled Lighting."

Whether you require fluorescent or incandescent illumination, Wheeler can supply *skilled lighting* for precision production. Write for catalogs of both types. **Wheeler Reflector Co., 275 Congress St., Boston, Mass.** ... New York, Cleveland. Representatives in principal cities.

Distributed Exclusively Through Electrical Wholesalers

Wheeler REFLECTOR COMPANY

Lighting Equipment Specialists Since 1881

(Continued from page 227)

of the components now that Priorities Regulation No. 10 is obsolete?

A. He can identify the end use to be made of the components by asking the person who ordered them from him to state the use which will be made of them.

23. Q. In the event that a manufacturer of Class X components submits a proposed schedule of deliveries which extends for a year or more into the future, and it is impractical to freeze the entire delivery schedule, may the industry division freeze a portion of the schedule covering say a 90-day period?

A. Sub-paragraph (c) (2) of Order M-293 states that each manufacturer shall deliver Class X critical common components only in accordance with the schedule filed. If the industry division wishes to freeze only a part of the schedule as filed, it must notify the manufacturer to that effect by appropriate order. In the absence of such notice, the entire schedule becomes frozen.

An alternate procedure is to state in the instructions accompanying the reporting form that a proposed delivery schedule is to be filed covering a period of say 90 days and that orders which are on the manufacturer's books for completion after the 90 day period are also to be reported but simply as information and not as a proposed schedule of deliveries.

24. Q. Can manufacturers of components used entirely in their own end products be released from filing under Order M-293?

A. Only when specifically instructed by the War Production Board.

25. Q. In the event that a manufacturer of Class X components has filed a proposed schedule of deliveries for six months into the future which shows that his capacity is entirely utilized for the first three months but that he has substantial unsold capacity during the latter three months, may he accept orders for delivery during the latter three months without first receiving the approval of the War Production Board?

A. Sub-paragraph (e) (2) of Order M-293 states that each manufacturer shall obtain Class X critical common components only in accordance with the schedule filed. It does not prevent a manufacturer from accepting additional orders provided that by so doing he does not interfere with his delivery schedules as filed. However, he may not make delivery of such orders until he has filed a proposed delivery schedule covering them with the War Production Board.

* * *

REVISE DIRECTION NO. 1 TO CMP REG. NO. 3

Direction No. 1 to CMP Regulation No. 3 has been revised to indicate that its intention is to place rated orders of dealers, distributors, and jobbers on a par with orders in the same rating band bearing allotment numbers or symbols, the War Production Board announces. The Direction does not have the effect of

(Continued on page 231)

IF THESE WORKERS "Fumble" YOUR MACHINES STAND IDLE

Prominent numbering of the receptacles for small taps and plug and ring gages makes for speedy handling, minimum delay at the tool crib window in this efficient crib arrangement. *Photo courtesy General Electric Co.*

These swinging racks give ready access to reamers, maximum protection to each tool. Quick identification even for inexperienced help is assured by prominent labels in front. *Photo courtesy General Electric Co.*

Installed for temporary storage of small items, these oblong cans have given very satisfactory service. Composition containers might well be substituted if metal ones are not available. *Photo courtesy Brewster Aeronautical Corp.*

EVERY needless minute your costly machines stand idle between jobs means less production for you — and a longer war for all of us.

The photographs here may show you the way to an important saving. For each shows an arrangement that gets tools on the job with no waste of those precious minutes.

No one of these arrangements may fit *your* shop . . . but that's not the point. They may suggest a method adaptable to your requirements.

In checking your tool storage methods, keep these three fundamentals in mind:

1. A place for every tool, with a record to show its disposition when it's out.
2. An easily read and systematic means of identification.
3. Ample protection for keen cutting edges.

There are few places in your plant where careful planning will pay you more than your tool crib.

GTD GREENFIELD

TAPS • • • DIES • • • GAGES • • • TWIST DRILLS • • • SCREW PLATES

ARMY E NAVY

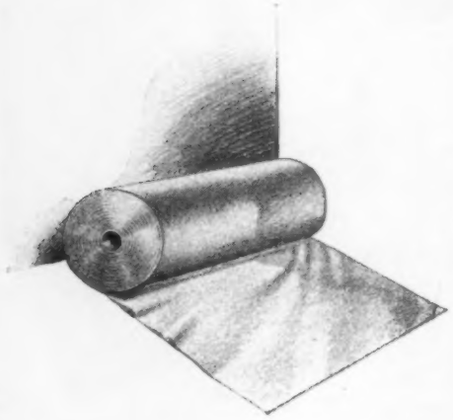
GREENFIELD TAP AND DIE CORPORATION
GREENFIELD, MASSACHUSETTS
DETROIT PLANT: 5850 Second Boulevard
WAREHOUSES in New York, Chicago and Los Angeles
In Canada:
GREENFIELD TAP AND DIE CORP. OF CANADA, LTD., GALT, ONT.

Tool Conservation Begins in the Tool Crib

CLOTH IS THE MEANS TO MANY ENDS

We take cloth in many weights and textures and then upon or within that cloth we prepare it for a great many different uses — too many to enumerate, too varied in properties to fully describe — too rapidly extending into new fields of use to classify.

Cloth is a foundation structure extremely flexible and very strong. It may be impregnated with a water resistant synthetic retaining its texture appearance, or it may be surface-coated concealing the texture.



Treatments render it waterproof, mildew-proof, fire and weather resistant. Transparent as in the case of tracing cloth, opaque as for window shades, etc. Treated cloth has a great industrial field of usefulness — only partly explored.

Our business is preparing cloth for special needs — print cloth, sheeting, drill, twill, duck — dyed, coated, impregnated, stiffened, etc. *Consider cloth for your post war needs — consult Holliston.*

PRODUCTS

BOOKBINDING FABRICS
(a) Waterproof, full coated or impregnated, linens and vellums: Pyroxylin and other synthetic resin and lacquer treatments.
(b) Starch filled, coated, impregnated. Natural, rough or smooth finishes, embossings, printings.

SHADE CLOTH
(a) Pyroxylin or resin impregnated waterproof, meeting Government specifications.
(b) Starch filled, water color, machine oil, oil tints, and Holland type shades; oil filled opaques; fast dyed duck shades; light-proof and translucent.

PHOTO CLOTH
Photo Mounting cloth (self adhesive).

REINFORCING FABRICS
All types of waterproof and filled reinforcing fabrics and industrial cambrics. Various weights from the thinnest print cloth to the heaviest drills and twills.

SIGN, LABEL AND TAG CLOTHS
Waterproof and starch filled. We can design a surface that will take any ink or meet any inking problem.

RUBBER SEPARATOR CLOTHS
Starch filled glazed sheetings and base treated starched fabrics for waterproof separator cloths.

INSULATING CLOTH BASE
Base treated and stiffened fabrics for insulating cloths.

TRACING & BLUE PRINT CLOTHS
White and blue ink or pencil cloth; map cloth; blue print cloth, thin and regular.

LINING FABRICS
Shoe and drapery linings; starch filled, special filled, mercerized and shreiner finishes; all colors and widths.

COATED AND IMPREGNATED FABRICS
All widths and colors; synthetic resin, nitro cellulose, thermo plastic and thermo setting coatings; mildew proofing; fire, weather and water resistant finishes, gas impermeable finishes, etc., for war and industrial purposes. Special treatments to meet special needs.

The HOLLISTON MILLS, *Inc.*

CONVERTING CLOTHS TO GREATER USE FIELDS

NORWOOD, MASSACHUSETTS

Sales Agents in Principal Cities

(Continued from page 228)

granting rated orders of dealers, distributors, and jobbers preference over other orders in the same rating band not bearing allotment numbers or symbols.

This means that a dealer's order rated AA-1 would have preference equal to a manufacturer's order rated AA-1 bearing an allotment number. However, the dealer's order rated AA-1 would not displace a manufacturer's order rated AA-1 in a production schedule.

The Direction has also been revised to apply the equality of dealers', distributors', and jobbers' rated orders to all such orders. Previously it applied only to those placed prior to April 7, 1943, calling for delivery not later than June 30, 1943.

* * *

WPB INSTRUCTION BOOKLET ON BILLS OF MATERIALS

Instructions for preparing Bills of Materials under the Controlled Materials Plan have been simplified, according to the War Production Board.

In issuing the instruction booklet, which supersedes General Instructions on Bills of Materials published November 14, 1942, Walter C. Skuce, Director of the Controlled Materials Plan Division, said: "These instructions have been revised by the War Production Board Controlled Materials Plan Division, in cooperation with the various Claimant Agencies, including the Army and the Navy, and with representatives of industry.

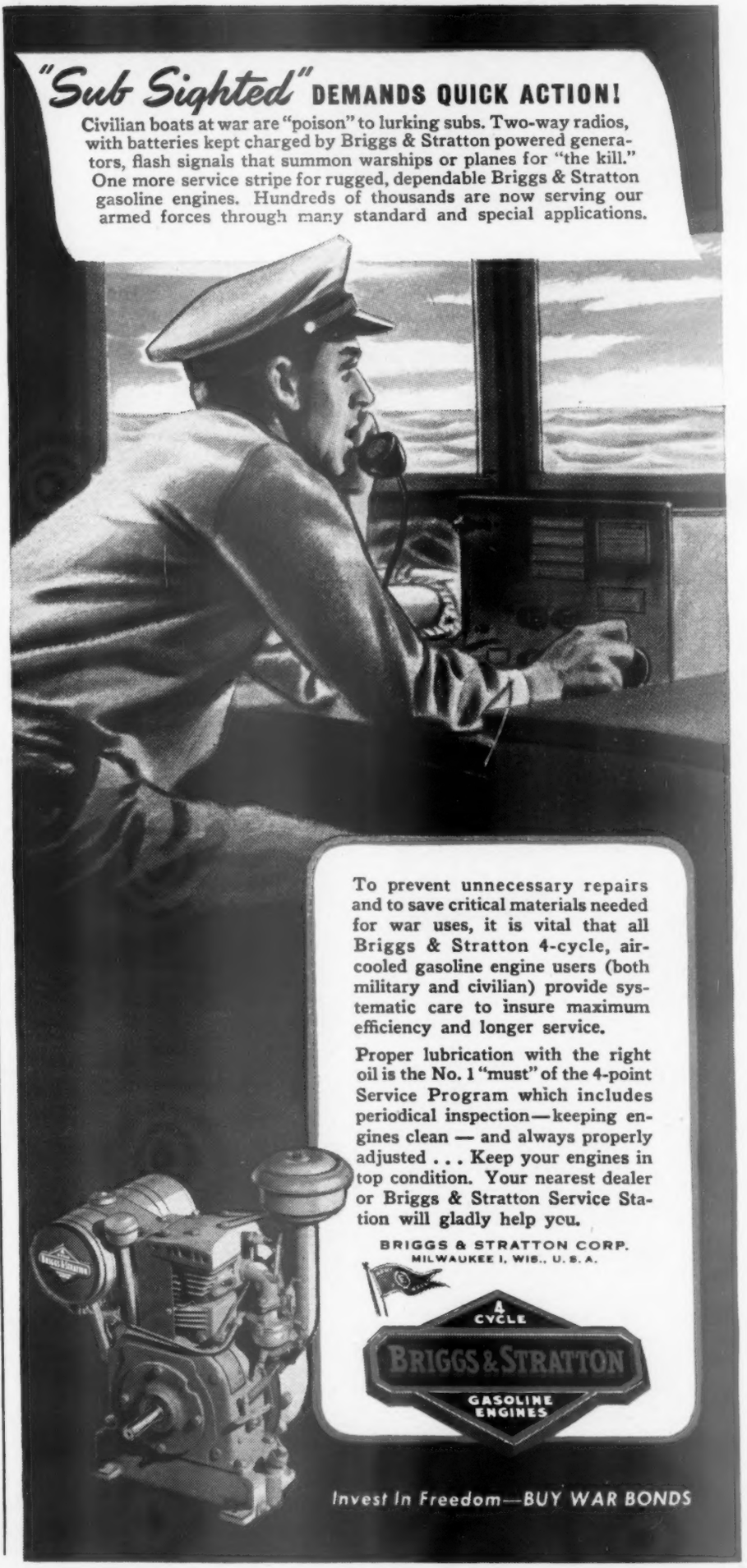
"No new forms are required by the revised instructions for Bills of Materials, and with the exception of a provision with respect to complete Bills of Materials, there has been no major change—the principal purpose of the revision being to clarify the instructions and make them simpler for industry to use in preparing proper bills.

"The accuracy with which Bills of Materials are filled out determines the accuracy with which WPB may allot materials to war production programs. As a consequence, industry cannot be urged too strongly to provide complete and accurate Bills of Materials whenever requested to do so."

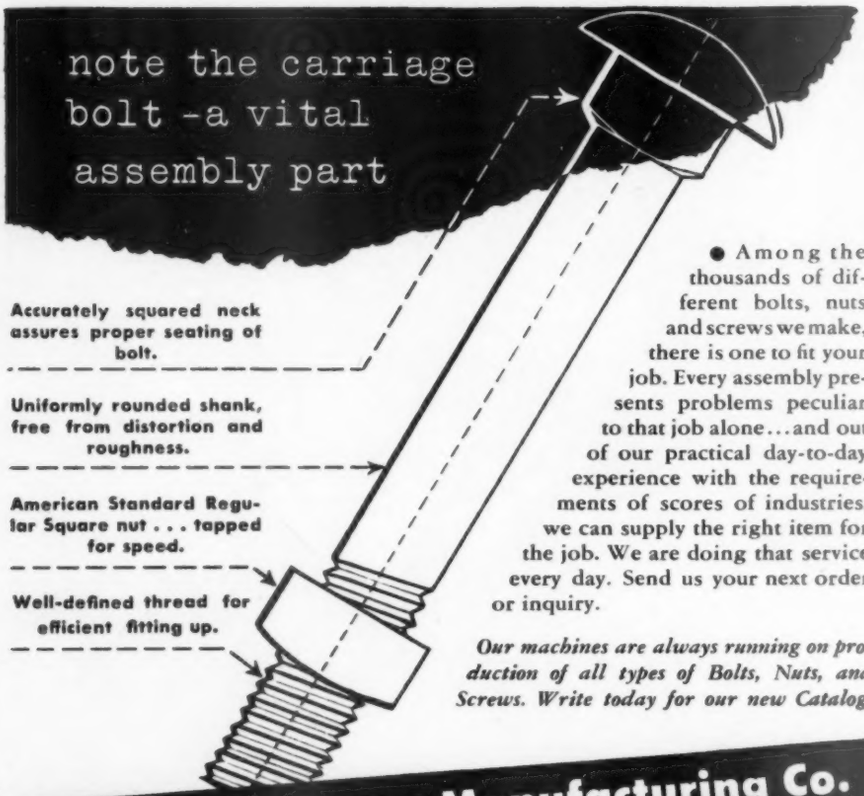
The new instructions authorize Claimant Agencies to obtain Complete Bills of Materials on major repetitive products such as airplanes, tanks and guns. It is pointed out that if a producer is asked to submit a Complete Bills of Materials, he must show the requirements for the manufacture of Class B components as well as for the manufacture of Class A components. This constitutes a major change from past practice under which material requirements for Class B components could not be required in Bills of Materials.

The booklet defines a Bill of Materials as "a statement of the materials required to produce a given product, assembly, subassembly, or part." The distinction is retained between a Detail Bill of Materials showing all materials required for each individual part or product, and a Summary Bill of Materials indicating total

(Continued on page 232)


"Sub Sighted" DEMANDS QUICK ACTION!
Civilian boats at war are "poison" to lurking subs. Two-way radios, with batteries kept charged by Briggs & Stratton powered generators, flash signals that summon warships or planes for "the kill." One more service stripe for rugged, dependable Briggs & Stratton gasoline engines. Hundreds of thousands are now serving our armed forces through many standard and special applications.
To prevent unnecessary repairs and to save critical materials needed for war uses, it is vital that all Briggs & Stratton 4-cycle, air-cooled gasoline engine users (both military and civilian) provide systematic care to insure maximum efficiency and longer service.
Proper lubrication with the right oil is the No. 1 "must" of the 4-point Service Program which includes periodical inspection—keeping engines clean — and always properly adjusted . . . Keep your engines in top condition. Your nearest dealer or Briggs & Stratton Service Station will gladly help you.
BRIGGS & STRATTON CORP.
MILWAUKEE 1, WIS., U. S. A.
4 CYCLE
BRIGGS & STRATTON
GASOLINE ENGINES
Invest In Freedom—BUY WAR BONDS

note the carriage bolt -a vital assembly part


Accurately squared neck assures proper seating of bolt.
Uniformly rounded shank, free from distortion and roughness.
American Standard Regular Square nut . . . tapped for speed.
Well-defined thread for efficient fitting up.

● Among the thousands of different bolts, nuts and screws we make, there is one to fit your job. Every assembly presents problems peculiar to that job alone... and out of our practical day-to-day experience with the requirements of scores of industries, we can supply the right item for the job. We are doing that service every day. Send us your next order or inquiry.

Our machines are always running on production of all types of Bolts, Nuts, and Screws. Write today for our new Catalog.

General Screw Manufacturing Co.
1238 West Monroe Street • Chicago, Ill.

RED TYE PARTS BAGS

On the Spot WHEN NEEDED!

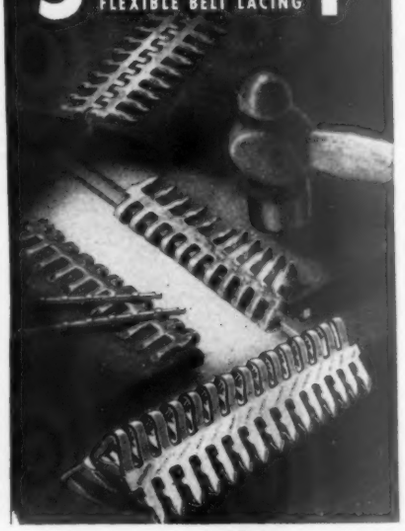
Make sure that small parts, accessories and replacements are on the spot when needed by putting them in a Chase Red-Tye Parts bag and attaching them right to the product. Avoid irritation and loss of time caused by overlooked or mislaid parts.

Chase Red-Tye Parts bags are available in many types and sizes . . . with or without tags or envelopes attached for letter, invoice or instruction sheet.

Write for samples and prices. Also inquire about Chase Red-Tye mailing bags . . . for the quick, safe delivery of small replacement parts.

CHASE BAG CO.
302 EAST PITTSBURGH AVE., MILWAUKEE, WIS.
ONE OF THIRTEEN GREAT FACTORIES

ARMSTRONG-BRAY
STEELGRIP
FLEXIBLE BELT LACING



Prompt Delivery!

—on both standard types of belt lacing.

STEELGRIP that is applied with a hammer that penetrates belting easily and clinches securely to make a strong, flexible smooth joint. 2-piece hinged rocker pins take up wear. In boxes or long lengths for wide belts, it compresses belt ends and prevents fraying, 8 sizes.

BELT HOOKS

Applied with any standard make lacing machine, these belt hooks come on double (patented) aligning cards that hold hooks in perfect alignment and prevent card end waste. 6 sizes.

ARMSTRONG-BRAY & CO.
"The Belt Lacing People"
3378 Northwest Highway Chicago, U.S.A.

(Continued from page 251)

quantities of each CMP material required for fabrication of the product, and in addition the time the various materials are required ("lead time") in order for a manufacturer to meet his production schedule. Complete instructions for filing both Detail Bills of Materials and Summary Bills are included in the new booklet.

The booklet spells out in detail the method of estimating lead time which must be entered on Form CMP-1, Summary Bill of Materials, and for Class B products and items of Government Furnished Equipment on Form CMP-3. It is pointed out that no lead time on materials need be entered on Form CMP-2, covering the Detail Bill of Materials.

Copies of the Bill of Materials are available upon request at the WPB field offices.

STEEL SHIPPING DRUMS PREFERENCE RATING REQUIRED

Users of new steel shipping drums were advised by the Containers Division, War Production Board, of the correct procedure in obtaining a preference rating which is required prior to submitting application on Form PD-835 for authorization to purchase new steel shipping containers.

Under Conservation Order M-255 (New Steel Shipping Drums), WPB allocates shipments of new steel shipping drums by manufacturers. However, a preference rating must be assigned before the Containers Division can authorize users to purchase the containers.

Preference ratings for drums to be used by the armed forces or other specified Government agencies are assigned by these agencies.

Users who now have a preference rating should make application for authorization to purchase new steel drums on Form PD-835.

A user not operating under CMP or PRP, who does not yet have a preference rating assigned, must first obtain such rating on Form PD-25F or Form CMP-4-b. After receiving the preference rating, he should apply for authority to purchase new steel shipping drums on Form PD-835.

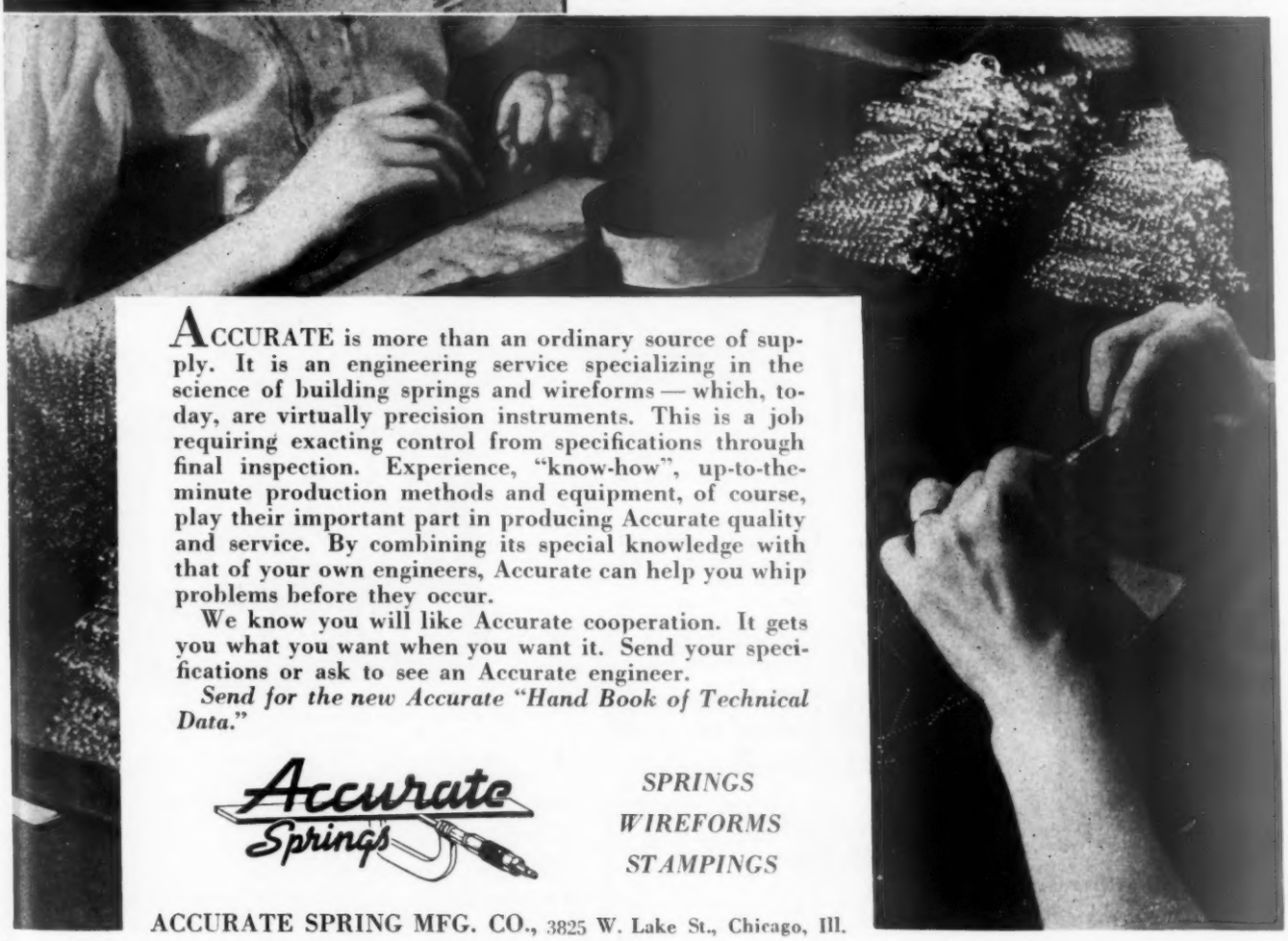
A user operating under CMP or PRP, who does not yet have a preference rating assigned, must file for such rating on Form PD-1-a.

Forms PD-25F or CMP-4-b should be addressed to the WPB in Washington, D. C.

Form PD-1A should be filed with the local Field Office of WPB. If the amount involves $500 or more, Forms PD-1A and PD-835 should be filed simultaneously, thereby saving the time required to obtain preference ratings and purchase authorizations separately.

Limitation Order L-197 (Steel Drums) prohibits the use of new steel drums for certain products. Therefore, application for preference ratings or purchase authorizations should not be filed for drums for prohibited products, unless an exemption from that order has been specifically authorized by WPB.

CHECK- CHECK- and DOUBLE-CHECK Insures ACCURATE SPRINGS



ACCURATE is more than an ordinary source of supply. It is an engineering service specializing in the science of building springs and wireforms — which, today, are virtually precision instruments. This is a job requiring exacting control from specifications through final inspection. Experience, "know-how", up-to-the-minute production methods and equipment, of course, play their important part in producing Accurate quality and service. By combining its special knowledge with that of your own engineers, Accurate can help you whip problems before they occur.

We know you will like Accurate cooperation. It gets you what you want when you want it. Send your specifications or ask to see an Accurate engineer.

Send for the new Accurate "Hand Book of Technical Data."

Accurate Springs

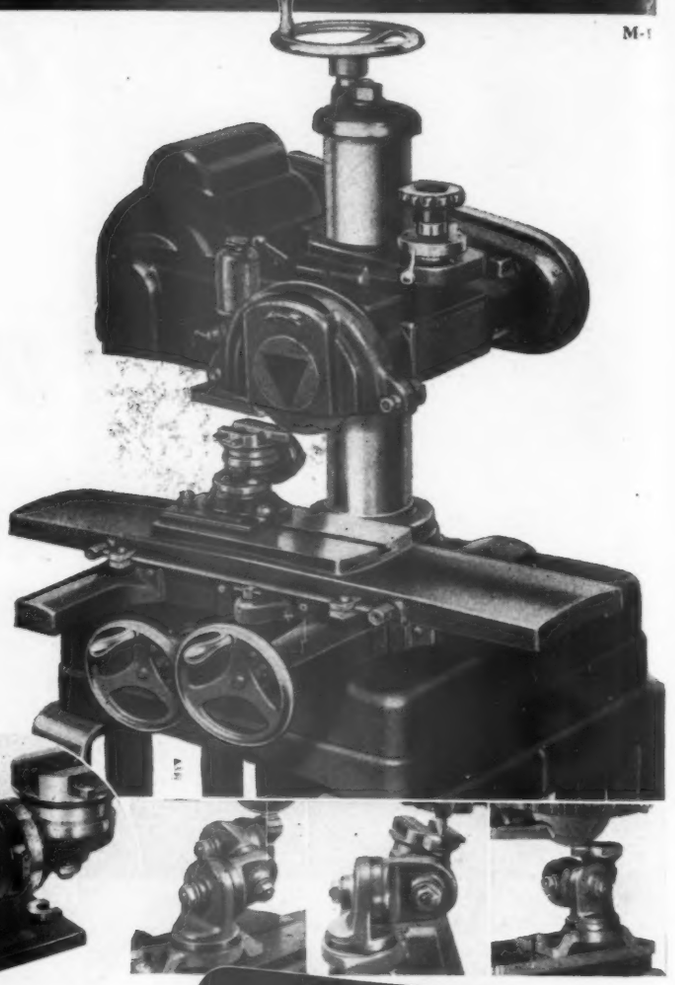
SPRINGS
WIREFORMS
STAMPINGS

ACCURATE SPRING MFG. CO., 3825 W. Lake St., Chicago, Ill.

New Delta Chip-Breaker Grinder is simple, fast, dependable, accurate — and *much lower in cost . . .*

Gives all-around, long-time satisfaction in grinding the chip-breaker groove on carbide-tipped tools—used also for other production grinding

M-1



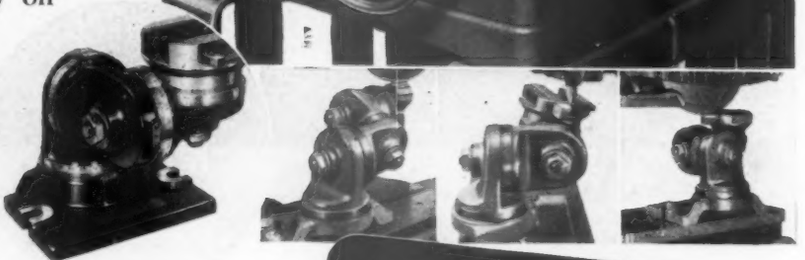
In grinders costing many times as much, you do not find many of the new, exclusive features you get in this latest Delta machine. It's husky, solid (weight 700 pounds), over 6 feet high, an accurate machine designed to turn out a big volume of work. Yet its cost is amazingly low.

Spindle shaft specially designed. Bearings widely spaced to provide permanently true alignment. Wheel mounting system permits removing either wheel alone, or wheel and adapter. Table is smooth operating with convenient control wheels — rides solidly on long ways.

Equipped with the new "UNIVISE"

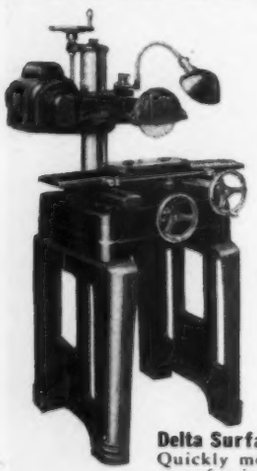
. . . holds the tool at any conceivable angle

Four distinct planes of adjustment. Can be accurately reset at a moment's notice so that the tool may be reground at *precisely* the same angles as originally set. Saves time, wheel wear. Eliminates bothersome and often inaccurate measurements.



With Univise and coolant attachment removed, this machine may be used as a regular surface grinder.

The features and performance of this Delta machine are amazing to those accustomed to paying far more than its cost. Investigate — be first in your plant to discover the convenience and economy of this new Delta grinder. See it at your Delta industrial distributor's — check priorities and deliveries.



Delta Surface Grinder
Quickly moved to any spot, freeing machines costing ten times as much.

DELTA MILWAUKEE Machine Tools

TEAR OUT AND MAIL THIS COUPON FOR FULL DETAILS

THE ARMY-NAVY "E" — *awarded for excellence in the production of machine tools vitally needed in the war effort.*

THE DELTA MANUFACTURING COMPANY
642G E. Vienna Ave., Milwaukee, Wis.

Please send me your new catalog giving full details on the Delta Chip-Breaker Grinder and your full line of low-cost machine tools.

Name..... Position.....

Company.....

Address.....

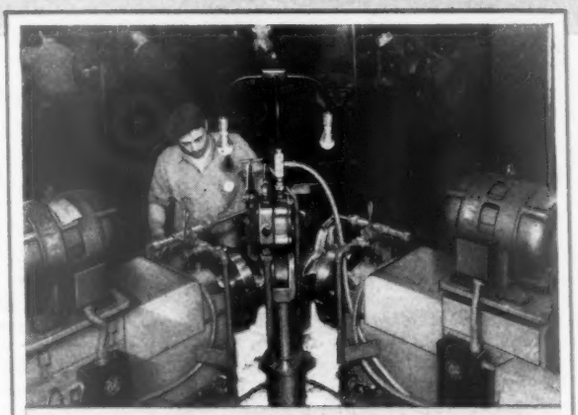
City..... State.....

There are several important reasons why, among qualified pipe welders, Midwest Welding Elbows have earned a reputation for exceptional dimensional accuracy and uniformity. One reason is because the included angle of 90° or 45° between the machine-beveled ends is always exact . . . both ends are simultaneously machined as shown at the right. The elbow's final sizing in compression makes it possible for the fixture to clamp it in accurate position—so the center-to-end dimension is always the same.

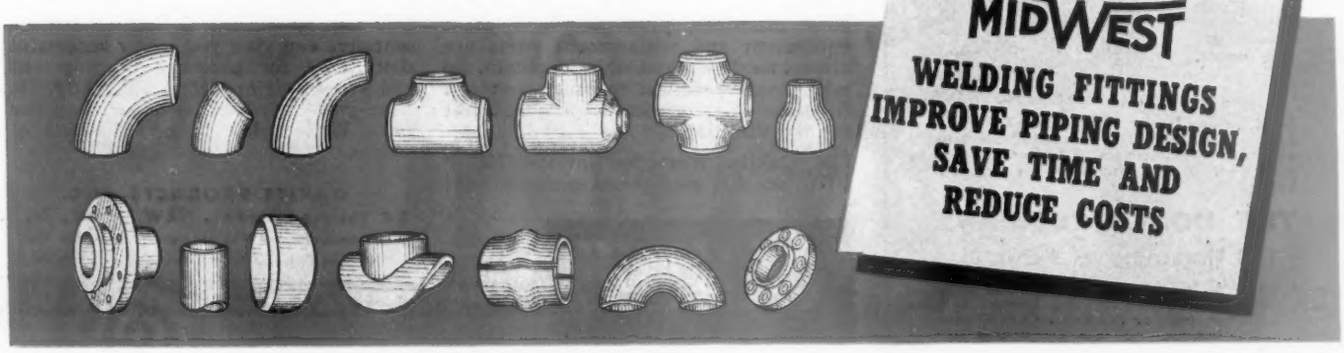
For data on all the advantages of Midwest Elbows . . . and the other Midwest Welding Fittings . . . ask for Bulletin WF-41.

MIDWEST PIPING & SUPPLY CO., Inc.

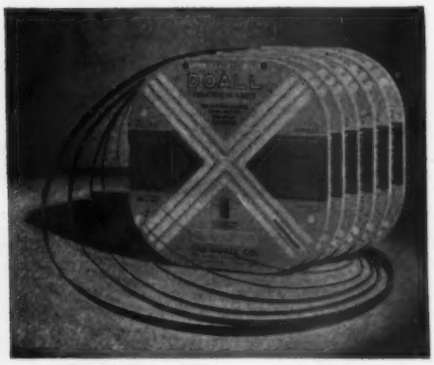
Main Office: 1450 South Second St., St. Louis, Mo.
Plants: St. Louis, Passaic (N.J.) and Los Angeles
Sales Offices: Chicago—645 Marquette Bldg. • Houston—229 Shell Bldg.
Los Angeles—520 Anderson Street • Tulsa—533 Mayo Bldg.
New York—(Eastern Division) 30 Church Street



Shown here is one of the machines especially built by Midwest for simultaneously machine-beveling both ends of Midwest Welding Elbows and holding the included angle within extremely close limits. Special fixtures and special tools were also developed for this work. Similar machines with three heads are used for finishing Midwest Tees.



THE RIGHT SAW
For Each Job



● **Using the proper band saw means saw life is doubled and trebled in many cases — jobs are finished quicker and smoother.**

Use only DoAll Band Saws according to the DoAll Job Selector and save money and man hours. Right now that's not only patriotic, but good business. With the Selector Dial anyone can tell instantly the right saw and speed for each kind of material.

FREE SAW CLINIC

If you have an unusually tough job that is slowing down production or ripping out saw teeth, send it to our Laboratory for free analysis and written report. Or, consult our factory trained engineer in your locality for valuable aid right in your own plant on your own work.

FORGED STEEL GUN BREECH

7⅝" high, Sawed with a ⅝" saw, A temper, 8 pitch, .042" Raker set, Speed, 125 f.p.m.

STACKED METAL SHEETS

Two stacks 3/32" thick, 30 pieces were completed with the right saws in 1½ hours.

Send for new book "DoAll Precision Saws". Lists styles and sizes of DoAll Band Saws and gives case histories of various hard-to-saw jobs. You'll find it interesting and helpful.

THE DOALL COMPANY

1214 Thacker St., Des Plaines, Ill.

DoAll Offices in 25 cities, each in charge of a trained sales engineer to give you quick service on Band Saws and Files, Contour Machines, Gage Blocks and Surface Grinders.

"FUNCTIONAL DESIGN" FOR FORMS, TOO

(Continued from page 81)

Agents' copies now as a kind of expediting record. This idea is doubtless sound, but it must be synchronized with a good "tickler" system to be wholly effective.

Record of shipments are being printed on the backs of receiving, merchandise control and office copies in firms where a number of shipments may be made to fill one order or contract. A record of invoices checked against the order is being used to some extent also, in cases where more than one invoice is rendered against a purchase.

The particular needs of each business will doubtless suggest many other functions which can be served by back-printing, but these are a few of the more common one being used successfully on a considerable scale.

Importance of Layout

Even more versatile is the face of purchase orders. By making carbon copies the Purchasing Agent is able to save much writing. And the more writing he saves, the simpler is his paper work. Moreover, through carbon copies, information—especially vital descriptive terminology—on each sheet is identical. (The zone design of the National Association of Purchasing Agents is probably the best method of incorporating many functions in the layout of a purchase order. Following it faithfully will guarantee inclusion of every common function of the order form.)

In addition to the vendor's copy, acknowledgment and two other copies for alphabetical and numerical files are usually added now. Government suppliers and contractors must generally supply anywhere from two to twenty copies to government officials. If the government doesn't want copies, the accounting department does, and comptrollers and auditors are coming to expect special provisions for the inclusion, or at least the checking, of accounting data. The department issuing the requisition, if a requisition is used, may want a copy (which could eliminate a special notification form or bothersome telephone calls). Inspection and Receiving copies need not pose a problem because the Purchasing Agent does not want to indicate quantities or prices to his clerks or inspectors. Perforated strips which can be removed, and blockouts, are the more common methods of cutting out this information, although short or strip carbons

(Continued on page 238)

OAKITE WARTIME SERVICE IS AVAILABLE WITHOUT CHARGE
TO ANY PLANT WORKING ON WAR ORDERS
Nation-Wide
OAKITE CLEANING
Field Service Staff

Help in Making All Your Equipment Last Longer!

New machines, processing and plant equipment and replacement parts are almost next to impossible to obtain. So take every practical measure you can to make your present equipment last for the duration.

Let Oakite Wartime Service HELP YOU do this easily and economically!

Our nearby Technical Service Representative can give you many successful short cuts for conserving equipment and keeping it operating efficiently. He is at your call whenever you say the word. Write today . . . no obligation, of course.

OAKITE PRODUCTS, INC.
54 Thames Street, NEW YORK, N. Y.
Technical Service Representatives Located in All Principal Cities of the United States and Canada

OAKITE SPECIALIZED CLEANING

"Someone ought to tell the Purchasing Agent — 'Thanks for specifying Jessop!'

"We machinists appreciate a good quality steel that can do the job. That's why Jessop Steel rates so high with us. Some of the old timers have been using Jessop for 42 years now and they know that Jessop Steels help to keep production on schedule.

"And when we sometimes get in a pinch we're not bashful about asking for some advice from the Jessop field representatives. Jessop knows how to make good tool steel — and they know the job it has to do today."

May we serve you?

WAREHOUSES:

- CHICAGO
- CINCINNATI
- CLEVELAND
- DETROIT
- HARTFORD

ESTABLISHED 1901

JESSOP STEEL CO.

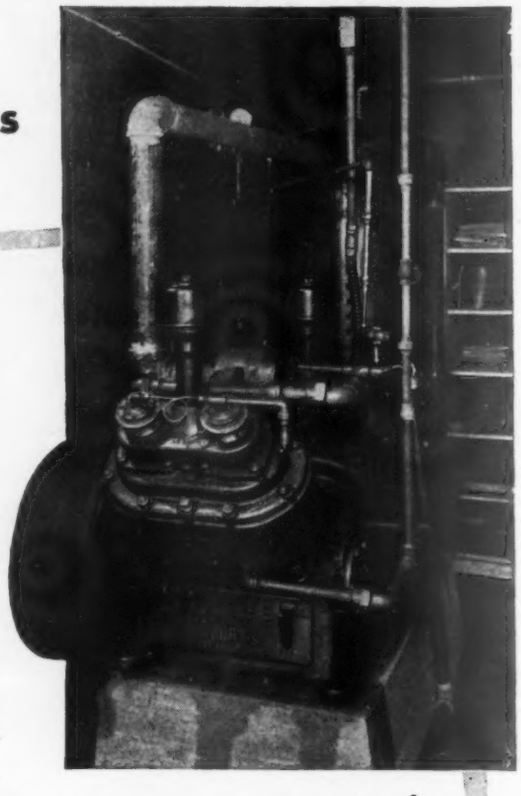
HEAD OFFICE AND WORKS : WASHINGTON...PENNA.

CURTIS Air Compressor

"Vital to our wartime operations"

Says

Bronze Alloys Company



Having recently installed a new Curtis Air Compressor due to an increased demand for air, Mr. Albert Vigne, President of Bronze Alloys Co., St. Louis, writes:

"The air from this compressor is used throughout our foundry to operate molding machines, vibrators and air tools such as chipping hammers and hand grinders. As you know, *a dependable and uninterrupted source for compressed air is vital to our operations*—we can't do without it. To say that we are elated with the performance of our new Curtis Compressor is putting it mildly.

"We do not know the age of our other (Curtis) compressor . . . it is being held by us in reserve for emergency needs. The old compressor . . . was purchased in a used condition. It has served us faithfully, and were it not for the fact that our increased operations demanded more air, we certainly would be using it continuously because it is in excellent condition . . ."

Thus, another user of Curtis Model "C" Air Compressors expresses complete satisfaction with Curtis performance—a tribute to Curtis engineering, precision construction, and all-round rugged quality.

Curtis Air Compressors are Timken Bearing equipped and available in capacities up to 300 CFM. Send the coupon for complete information and free booklet, "How Air Is Being Used in Your Industry."

CURTIS ST. LOUIS • NEW YORK • CHICAGO SAN FRANCISCO • PORTLAND

CURTIS PNEUMATIC MACHINERY DIVISION OF CURTIS MFG. CO.
1908 Kienlen Avenue, St. Louis, Missouri

• Please send me your free booklet, "How Air Is Being Used in Your Industry," and further details concerning Curtis Model "C" Compressors.

Name.....
Firm.....
Address.....
City..... State.....

(Continued from page 236)

and narrow sheets are also used to some extent. Die-cut carbon used to be popular for this purpose, but war pressures have forced virtually all manifolding firms to withdraw this service for the duration.

These devices can also be used to eliminate accounting data spaces from acknowledgment copies, although a change of copy or simply a deletion on other sheets effectually eliminates printed matter without resource to manifolding thaumaturgy.

The purchase order is being used to simplify the issuing of change notices, also. If your procedure for issuing such notices is indicated on the original in some manner, suppliers will appreciate it. However simple or effective your own change notices may be, they are bound to be different from those of almost every other buyer with whom the vendors deal. A simple explanation of how you handle changes will inspire respect and co-operation far out of proportion to the effort involved in including the information on your order.

Basic Principles

Those are a few practical examples taken from actual usage, of the application of "functional design" in reducing the number of forms necessary to do the job of buying in these days of short help and rationed merchandise. They will not, cannot, solve the intricate problems of every purchasing agent, but they have paved the way for the solution of some pretty complex situations.

Basically, the dogma of forms design is two simple aphorisms. First, never use even one unnecessary form. Second, combine as many functions as is *efficiently* possible in one form.

Everything else anyone can say about forms design is an extension of those two sentences. It is a simple thing—too simple—to multipy forms as functions multiply, but it is even simpler in the long run to keep those functions herded closely within few and compact corrals.

* * *

Warehousing Program for Aircraft Steels

(Continued from page 85)

cannot place an order for the purchase of warehouse stock of any one size and specification in quantities equal to or greater than those shown in the Earmarked Stock Directive #6. Manufacturers who do not

(Continued on page 240)

KEEP THIS WAR WORKER SAFE

with the only grating that has the unique twisted bar!

No time for "absenteeism" caused by injury these days. Install *non-slip* Blaw-Knox steel grating. BETTER FIVE WAYS.

1 **SAFE**, the unique twisted bar prevents slipping in any weather

2 **STRONG**, one-piece electro-forged construction

3 **OPEN**, for light and air, easy to paint and maintain

4 **SELF-CLEANING**, no sharp corners to clog with dirt

5 **ECONOMICAL**, and easy to install

BLAW-KNOX DIVISION of Blaw-Knox Co.
2075 FARMERS BANK BUILDING · PITTSBURGH, PA.
NEW YORK CHICAGO PHILADELPHIA BIRMINGHAM WASHINGTON
Representatives in Principal Cities

BLAW-KNOX STEEL GRATING

THE TWISTED BAR MAKES IT SAFE!

★ ★ FOR VICTORY BUY U. S. WAR BONDS AND STAMPS ★ ★

A Combination Hard To Beat!

THE right steel — the most modern machines — and skilled craftsmen — those are the ingredients of superlative tap-making. At Threadwell, the steel is metallurgically correct. The machines are the most modern that money can buy. (The Ex-Cello thread grinder in the photo is a good example.) And at Threadwell the men have tap-making skill that is a heritage of generations of threading tool craftsmen. Your "Threadwell" distributor will give personal attention to your tap needs.

THREADWELL TAP AND DIE CO.
Greenfield, Mass., U.S.A.

★

Export Stocking Distributors
CANADA: BRIDGE MACHINERY CO., MONTREAL
ENGLAND: SKYLUX LTD., LONDON

Threadwell
"TAPS OF DISTINCTION"

(Continued from page 238)

have a copy of this directive may secure one by writing their Procurement District Office or the Aircraft Scheduling Unit, Dayton, Ohio. In the case of a production emergency this ruling may be relaxed but only with the approval of the Aircraft Scheduling Unit.

If the manufacturer should need a quantity greater than that contained in Directive #6, he should immediately notify his Procurement District Office which will in turn certify the emergency to the Aircraft Scheduling Unit. The Aircraft Scheduling Unit will then authorize the warehouse to deliver the specified steel. Under no circumstances can this be accomplished without the proper certification from the Procurement District Office.

To speed up deliveries of the steel from the warehouse, manufacturers may now use a blanket certification.

This certification will state that the steel requested is to be used only on authorized products and this will be accepted by the warehouse unless it has reason to believe the material will not be used as specified. In such cases the warehouse may withold shipment pending an investigation by the Procurement District Office.

In order to maintain the proper balance of stock in the warehouse and prevent tying up important materials, warehouses will not set aside certain lots for longer than seven days awaiting receipt of the Purchase Order.

An added feature of the program makes it possible for the warehouse to assist the manufacturers in the redistribution of surplus stocks. The warehouse will be notified by the Aircraft scheduling unit when such surplus stocks are available and they have been instructed to purchase them from the manufacturer whenever possible. Thus the manufacturer will be relieved of the necessity of filling small orders from other contractors and will be saved considerable expense.

A detailed copy of the program, the Earmarked Aircraft Stock Directive #6 and a complete list of steels to be stocked by the warehouse may be secured from the Procurement District Offices or from the Aircraft Scheduling Unit, Dayton,O.

MAINTENANCE CLEANING SUPPLIES

(Continued from page 92)

company has found that if a concrete surface is cracked or spalled, detergents having much free alkali can penetrate to the aggregate and thus can increase the rapidity with which the floors will fall under heavy trucking.

To aid in removing oil, an oil soap had been used. This stayed in the pores of the concrete to some extent, and left the floors slippery when water was spilled upon them.

Use of a stronger detergent solution, applied hotter and with longer soaking period, was found successful in cleaning off the oil without using the soap. But in some areas this led to a dust problem. In inspection and other departments, the amounts of dust falling upon the benches and upon the oil-covered machine parts was found to increase when the concrete pores no longer contained the oil soap. Therefore the floors were divided into areas to be cleaned with oil soap in the solution, and those to be handled without it.

Later on a different method was adopted. Areas to be oily enough to be dust catching, were swept nightly with a floor cleaning compound which had a slight excess of oiliness, with thorough cleaning by washing every second week.

Wood block floor areas were included in the "long soak" group. Wood blocks, properly set, will take oil and water while ordinary wood floors will not.

Rinsing qualities were one of the primary considerations in mixes for "short soak" areas. The better the rinsing qualities, the less the total water exposure necessary for surfaces and materials which cannot stand much water.

Sodium bicarbonate, caustic soda, borax and caustic potash all are poor rinsers.

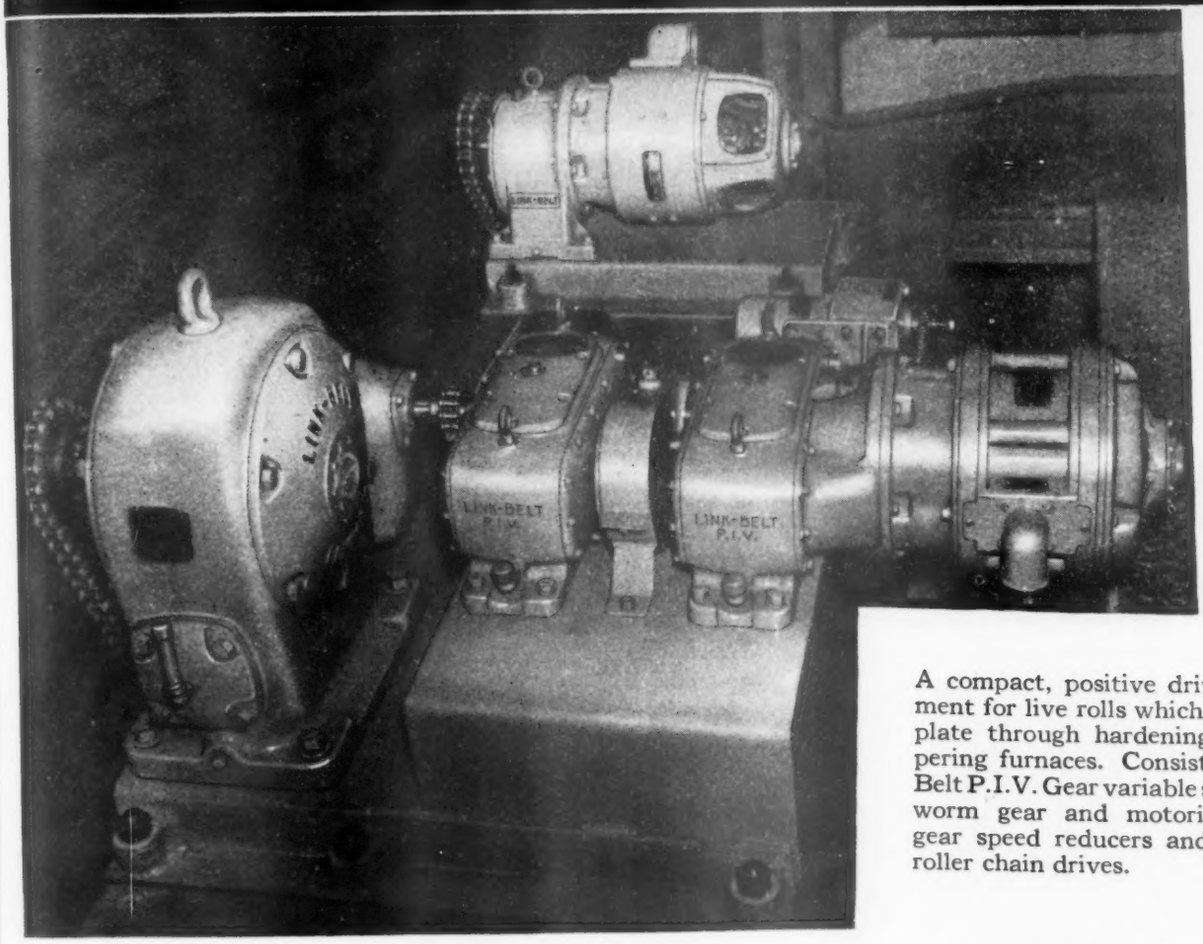
Two of the better rinsers are trisodium phosphate, and sodium metasilicate.

The company uses trisodium phosphate, one half ounce to the gallon, for bare wood floors, with scouring powder at the oily spots. The practice is to rinse thoroughly but wipe dry before the water can soak in. This means washing a small area at a time. Soap is used only on painted areas of wood floors, and is removed thoroughly by rinsing to avoid leaving the floors slippery.

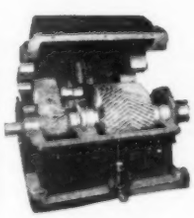
The danger in cleaning wood work, of course, is that the water will get into crevices and soak in, causing warpage, and that painted or var-

(Continued on page 242)

How to Assure Correct Speed Reducer Application

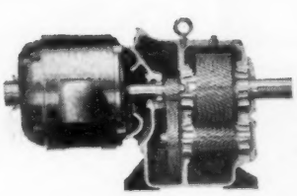


A compact, positive drive arrangement for live rolls which move steel plate through hardening and tempering furnaces. Consists of Link-Belt P.I.V. Gear variable speed units, worm gear and motorized helical gear speed reducers and Silverlink roller chain drives.



HERRINGBONE GEAR REDUCERS

Link-Belt herringbone gear reducers are made for all-around ruggedness, efficient high speed operation and ability to withstand shock loads, with quiet operation and complete protection against dust, dirt and fumes. Especially well suited for large reductions or increases in speed where space is limited. Single, double and triple reductions up to 1000 H. P. Ratios 10:1 to 318:1.



MOTORIZED HELICAL GEAR REDUCERS

Link-Belt motorized helical gear reducers provide unusual compactness, simplicity and economy in first cost, with high efficiency and durability. Available in 8 standard sizes, double and triple reduction types—up to 75 H.P., with standard A.G.M.A. output speeds, for mounting on wall, ceiling or floor.

WORM GEAR REDUCERS

Link-Belt worm gear reducers for large ratios and flexibility of arrangement and where drives of right-angle type or other shaft combinations in single and double reductions are required. Horizontal and vertical types — adaptable to almost any form of speed reduction from 1100 to 115,000-inch pounds torque. Ratios 3⅝ to 8000 to 1.

• It's important in choosing a speed reducer to have an experienced organization to call on for engineering advice. Because Link-Belt does have the experience and because the Link-Belt line of speed reducers is so complete, you can be certain of unbiased recommendations as to type and size and complete performance satisfaction when you use Link-Belt speed reducers.

The Link-Belt line includes herringbone gear, worm gear and motorized helical gear reducers in practically any ratio and size you may require—the correct type for every application. Complete data sent on request.

LINK-BELT COMPANY

Philadelphia Plant, 2045 W. Hunting Park Ave.; Chicago, Indianapolis, Atlanta, Dallas, San Francisco, Toronto. Branch offices, warehouses and distributors in principal cities. 9220

LINK-BELT SPEED REDUCERS

SHE'S FIGHTING TOO! MAKING PARTS WITHOUT DIES

No delay waiting for dies — parts ready quicker — deliveries speeded up — all to bring the Victory sooner! Women are rapidly taking a major place on the industrial front. DI-ACRO Precision Machines — Shears, Brakes, Benders — are ideally suited for use by women in making duplicated parts accurate to .001"—DIELESS DUPLICATING. Thousands of DI-ACRO Machines are now in use in War plants. **Write for catalog —"Metal Duplicating Without Dies."**

O'NEIL-IRWIN MFG. CO.
305 8th Avenue South
MINNEAPOLIS, MINN.

One of the known reasons for Absenteeism is Industrial Dermatitis. Clean, sanitary washrooms provided with PAX Industrial Skin Cleansers are playing a big part in the program to combat Absenteeism.

PAX super cleans and protects the skin—it is tough enough to remove ground-in grime—yet mild and bland enough to completely protect the skin. It is formulated to be used by both men and women plant workers.

Lanolin

Yes, indeed! PAX formulas have used lanolin for 18 years.

PAX

2040 Walnut, Dept. P St. Louis, Mo.

(Continued from page 240)

nished surfaces will be dulled or marred. Personnel are taught therefore to wash painted and varnished surfaces with soft warm water, then to follow up with the mixture of one half ounce of trisodium phosphate per gallon of warm water, and finally to rinse and wipe dry. Neutral soap is used in some instances, but never any mixture of trisodium phosphate and the soap.

Use Special Wax

The company waxes its linoleum floors. But since wax can make these floors slippery, a special specification is followed which gives only a very thin waxing. This surface is mopped every night with a mild solution of neutral soap, being rinsed and dried immediately. Waxing is renewed once per month, and the life of the linoleum seems to be indefinite unless damaged by trucking or by accidents. Linoleum by itself will withstand water indefinitely, but water getting beneath it will cause rotting and buckling, therefore the soap is specially selected for its rinsing qualities and the minimum amount of water is used, small areas being cleaned at a time.

Rubber tile floors are treated like the linoleum but the supervision of their cleaning is more strict and the areas cleaned at one time are smaller.

Mastic Floors

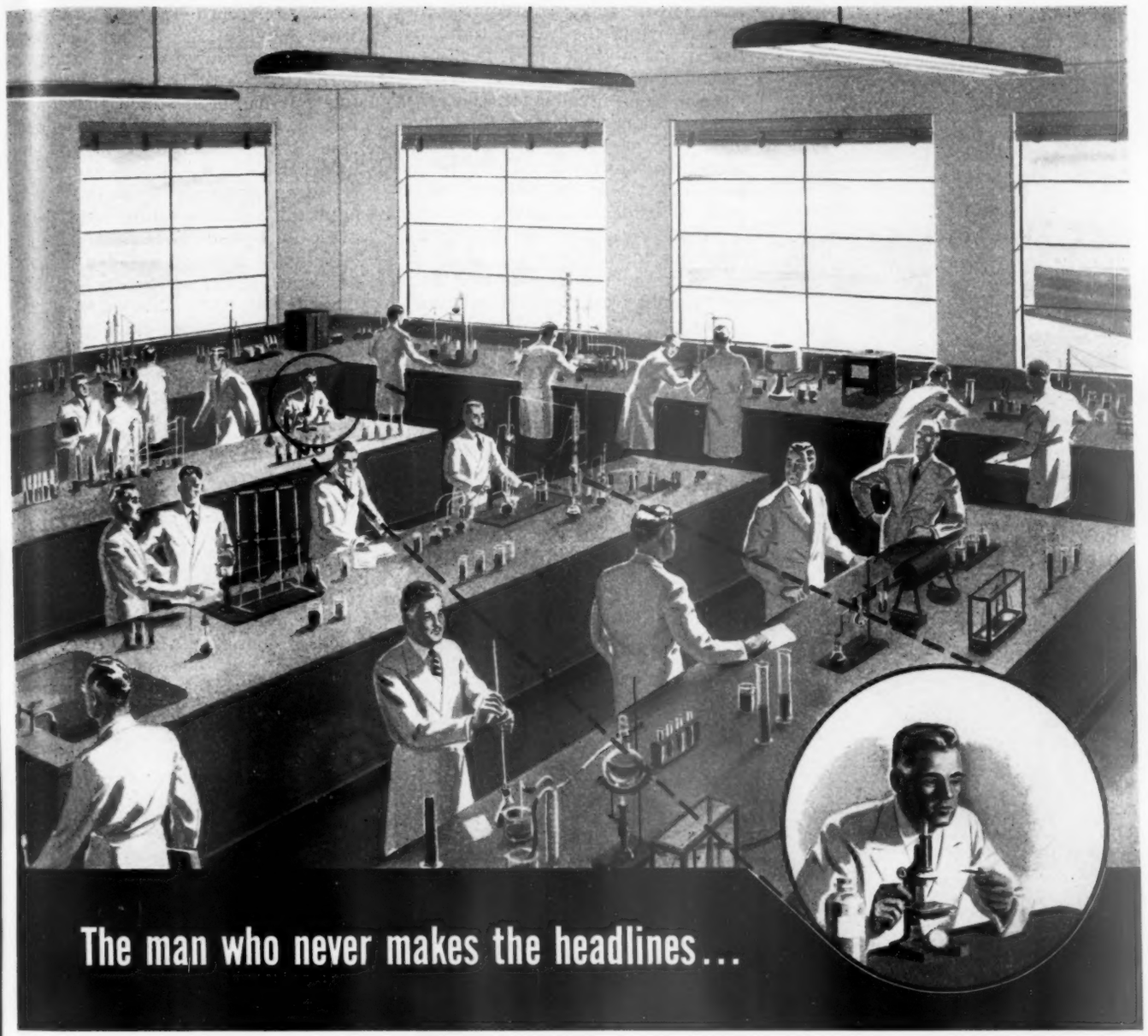
Problems are found in the mastic floors in the factory. Several brands and varieties of mastic have been used. Some of these will stand water and oil better than others, but none seems to be undamaged by excesses of free alkali in the detergent. Certainly they cannot be treated like concrete.

The company follows a "short soak" schedule with them, treating them much like linoleum but washing with an easy rinsing, built soap, cleaning small areas at a time and being sure to rinse and dry thoroughly.

Best results are had in the factory areas where machines can be used for scrubbing. The "soak period" is absolutely subject to control in a machine which washes, scrubs, rinses and dries as it goes, all in one operation. Labor for these machines must be more highly trained than for manual scrubbing. The detergents must be selected and mixed with more care too, as machine time can be conserved or wasted by carelessness in this respect.

This company continues to build

(Continued on page 244)



HE'S ONLY a laboratory assistant, one of those humble toilers whose names never make the news. But he's played a mighty important part in making possible the scientific achievements that have made his superior's name a household word.

In the records of American industrial achievements, too, there are many who labor—and willingly—in behind-the-scenes obscurity. The Joyce name, for instance, may not be known to the man in the street, but it is a familiar name to a large and growing number of America's largest industrial plants. For the parts, assemblies, machines and products, assembled and built by Joyce engineers and craftsmen are helping many war-busy plants to achieve production records that win awards and headlines.

Much of Joyce's facilities are now devoted to assemblies and large-scale production of precision parts for the Army, Navy and leading war plants—but the ingenuity of Joyce's engineering staff is still available to others with war production problems. Whether part or product, if it can be made better, faster, cheaper, more efficiently, Joyce "know how" will find the way.

A Joyce representative will be glad to explain in detail the unique advantages we can offer.

BEHIND THE MAN ▸ BEHIND THE MAN ▸ BEHIND THE GUN

JOYCE
Machine Company
WHEATSHEAF LANE • PHILADELPHIA
MANUFACTURERS OF PRECISION PARTS
FOR ALL KEY INDUSTRIES

(Continued from page 242)

its maintenance cleaning program by theory, laboratory study, and trial and error. But the greatest of these is trial and error, the supplies and methods in the hands of the kinds of personnel which are recruited for the clean up gangs.

1 1 1

FIBRE CONTAINER PROCUREMENT

(Continued from page 94)

materials has been overlooked until the product was ready for shipment. Another factor rendering it advisable to anticipate container requirements is that, while the War Production Board has not, so far, officially cut container board production, the 25% reserve being created for allocation by the War Production Board has that effect. This, in addition to the tremendous increase in the use of fibre containers to replace those made of critical materials, has rendered the situation very difficult for container manufacturers, most of whom are currently operating on a six to eight week delivery schedule.

The new W.P.B. Order—P140—should be carefully studied by all producers and shippers since it assigns high preference ratings (ranging from AA-1 to AA-5) for the procurement of shipping containers, in accordance with the importance of use. It has been stated that there will be millions of containers available for products not covered by Order P 140; if difficulty is experienced in obtaining them, however, application for a rating should be made on Form PD-802.

While it was not possible, within the scope of this article, to do more than touch upon many important aspects of container purchasing, it should help to delevop a definite concept of procedures essential to efficient fibre container procurement. Although folding boxes, bags, fibre cans, etc. have not been specifically treated in this paper, the principles outlined generally apply to their procurement.

The author's suggestions are based upon over six years' practical experience with a large industrial concern—from assisting in establishing a special centralized purchasing division for paper, printed forms, and paper products in general, to actually purchasing these materials (particularly packaging) for all plants. During the period mentioned, it proved possible to effect annual savings amounting to several times the incidental costs.

1 1 1

HOW TO BECOME INDISPENSABLE

(Continued from page 95)

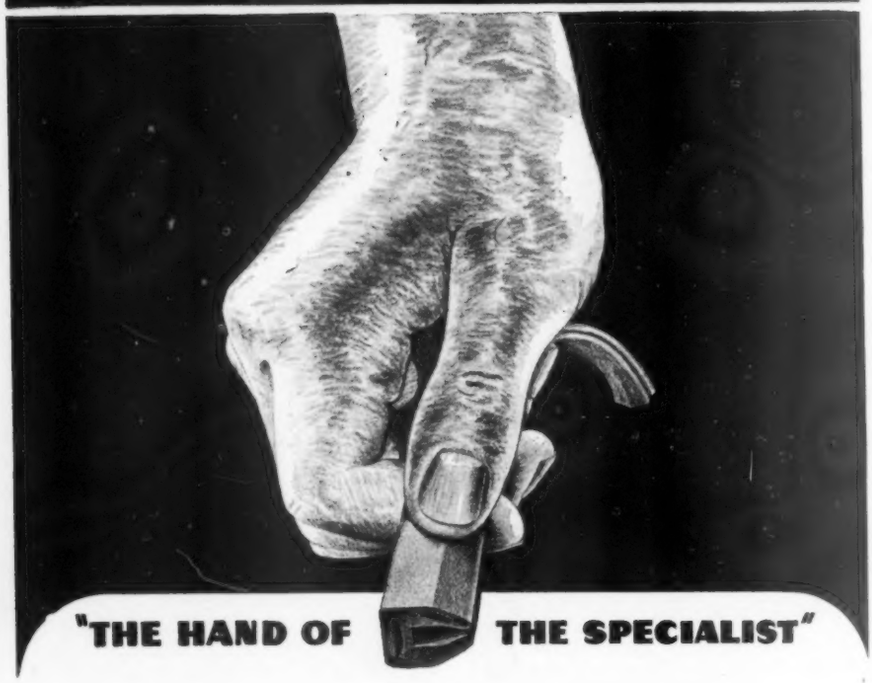
clerk in the City Roads Branch, West Division, at 20 cents an hour. He studied his job, and he studied outside of his job. By 1912, he had become Assistant Accountant of the West Division, but in that year he also passed civil service examinations, which entitled him to a position in the Federal Civil Service. In 1912, therefore, he resigned from the City's service.

Just eleven months later, he came back, at the special request of the City's Department of Public Works, to become Chief Accountant of the Roads Branch. And his salary was substantially increased, needless to say.

Five years later, when the Municipal Stores were all at sixes and sevens and nobody ever knew for sure how many horses the city had, or how many anything else, Mr. Nickle was invited to take over and organize a proper Municipal Stores Division. Today he not only knows

(Continued on page 246)

CONTINENTAL RUBBER WORKS



"THE HAND OF THE SPECIALIST"

THE PRESENT PACE in rubber development—especially in synthetics—presages an era of far reaching improvements for all users of industrial rubber goods. Wherever rubber or synthetic parts have been needed in the war effort, Continental has been of definite service. With forty years experience in the design and production of specialized rubber products, Continental is doing a real wartime job which will qualify it for even broader fields of service in the years to come.

CONTINENTAL RUBBER WORKS *makers of the* VITALIC

ERIE, PENNSYLVANIA · U·S·A · *line for forty years*

"Who says a War Job is Tiring?

...WHEN IT'S SO EASY TO DO GOOD WORK!"

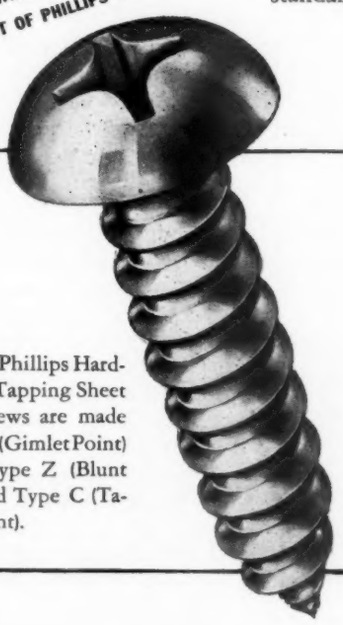
4-WINGED DRIVER CAN'T TWIST OUT OF PHILLIPS RECESSED HEAD

Fatigue is the Chief Absentee where Assemblies are made with AMERICAN PHILLIPS SCREWS

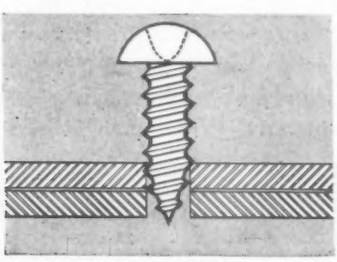
War jobs are *not* tiring when assembly work is done with *automatically straight-driven* American Phillips Screws. Even inexperienced hands catch on quickly to the simple routine of aiming and driving with one hand, while the other hand braces the work. No nerve-strain . . . because there's no chance of fumbling starts and wobbly, crooked driving . . . hence no undue weariness that slows production. Instead, always the stimulating incentive of work well done . . . because the non-slip connection between the 4-winged driver and the tapered recess of the American Phillips screw-head means that operators literally *can't miss.* Hour after hour, each American Phillips fastening duplicates all others, with a screw-head that sets up tight and plumb-level. No burred or broken heads, no gouged work-surfaces.

That's why women who drive American Phillips Screws can outwork men who drive slotted screws . . . *by 50% or more.* And that's why plants that tried American Phillips Screws continue to use them. You can bank on American for all types and sizes of Phillips Screws . . . every order piece-inspected for conformance to American standards of quality. Let American help *you* to "put the screws on the Axis"—*faster.*

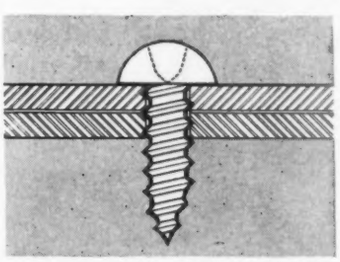
AMERICAN SCREW COMPANY
PROVIDENCE, RHODE ISLAND
Chicago: 589 E. Illinois Street *Detroit:* 5-267 General Motors Building



American Phillips Hardened Self-Tapping Sheet Metal Screws are made in Type A (Gimlet Point) shown, Type Z (Blunt Point), and Type C (Tapered Point).



American Phillips Driver and Screw form a single, straight-line driving unit . . . and stay that way until screw is completely driven in.



American Phillips Hardened Self-Tapping Sheet Metal Screw sets up tight and straight in drilled or clean-punched holes.

(Continued from page 241)

how many horses the City has, but how many pounds of manure they produce every year. He sells it to farmers and the City gets a substantial bit of revenue that way.

From then on, his progress was steady and always in the same direction. A City Purchasing Agent went out in a blaze of publicity over a horse-purchasing episode in which several politicians played a none too savory role, and another came in who was too scared of the politicians to do much of anything on his own initiative, and the purchasing end of the City's business was going none too well when the Mayor called Alex Nickle into his office, and asked him to take hold of the stingy nettle and see if he could make it behave.

From that day he took over, politics went right out of that office. Efficiency came in at the same time. The first time a new employee had to be hired, he hired a junior to start at the bottom of the ladder—answering callers at the counter downstairs and directing them to various offices.

Every man or woman that has come into the office since then, has come to the same job. When he or she makes good at that, he or she is in line to be promoted to a better job. But the candidate for that job is selected as carefully as if it were for Nickle's own job. In fact, that is just Alex's main point. When he hires a beginner to answer callers at the downstairs counter, he is hiring a candidate for the position of Director. And if the candidate does not measure up to that standard of ambition and aggressiveness, he or she does not interest Mr. Nickle.

His staff numbers a little over a hundred. They handle a stock that varies between $500,000 and $5,000,000 in value according to seasons and needs.

Must Work from 8:45

Starting time is 8.45 a.m. And that means, the time that the fingers start tripping over the typewriter or the comptometer keyboard. Taking hats off, powdering noses, shaking out pipes and washing hands before starting to work, are none of the City's business, nor of Mr. Nickle's. Clerks and other workers are paid from 8.45 a.m., and must work from 8.45 a.m.

On the other hand, there is a 15 minute rest period declared every afternoon, on Mr. Nickle's personal authority. During those 15 minutes employes can sit down, lie on the floor in their rest rooms, or limber up with a daily dozen or, in a word, anything they please. "I hate to see soft drinks or cups of tea or stuff of that sort on people's desks while they are working," he explains. "It doesn't fit in with proper work. But in the rest period the little restaurant across the street can deliver anything the men or women want. They are free to do as they please, so long as they are back on the job, refreshed and good for a further slew of work as soon as it's over."

Fights for Workers

An then, another point, if Mr. Nickle's workers want something and he thinks they should have it, he'll fight like a legion of devils to get it for them. "I'd rather get a raise in salary for a good, hard-working and ambitious employee, than get it for myself," is another of his frequent sayings. And down at the City Hall, they say that however tough Nickle may be for his workers, he's tougher still when he's fighting for them.

When Montreal went into default in 1940, and the Provincial (i.e. State) government stepped in and clamped down a financial control on the City, there was a good deal of shaking up and shaking

(Continued on page 248)

The better the draftsmen . . .

. . . the more they appreciate

ARKWRIGHT TRACING CLOTHS!

That's because the specially processed surface of Arkwright Tracing Cloths makes it possible for good draftsmen to turn out topflight work consistently. Not only is the surface smooth enough to take the finest ink lines without spreading or feathering. It's also tough enough to take erasures without smudging or wearing through. Try Arkwright Tracing Cloths yourself! See if they don't make a difference in your work. Arkwright Finishing Company, Providence, Rhode Island.

Arkwright TRACING CLOTHS

AMERICA'S STANDARD FOR OVER 20 YEARS

UNFAILING PERFORMANCE

Unfailing performance of plastic parts in hundreds of electrical and mechanical applications for years has shown plastics to be thoroughly reliable. In certain apparatus, such as the fuse cutout handle below, plastics have been found superior to any other medium.

The continuous application of plastics to new war problems is added proof that plastics engineers are finding successful solutions to problems once believed to be outside the realm of plastics.

General Electric, the nation's largest plastics manufacturer, has complete research and development laboratories, experienced design and product engineers and hundreds of expert plastics molders. The services of this organization are available to any user of plastic material.

For further information write Sec. C-7, One Plastics Avenue, Pittsfield, Mass.

Listen to the news on the WORLD TODAY each weekday evening, CBS, 6:45 E.W.T. On Sunday, listen to the HOUR OF CHARM on NBC, 10:00 P.M. E.W.T.

PLASTICS DIVISIONS

GENERAL ELECTRIC

PD-7

Safety demands FIBRE-TEX

FLOOR COMPOUND

Oil *will* seep, drip and splash! It *will* get onto floors—create hazards under foot! Remove oil the *safe* way—keep floors clean, dry, with Fibre-Tex; ideal because it

1 **WON'T BURN**—eliminates dangers inherent to inflammable compounds and solvents!

2 **ABSORBS OIL RAPIDLY**—acids and other liquids, too—in astonishing quantities!

3 **CLEANS ACTIVELY**—actually removes traffic-caked grease and dirt accumulations!

Fibre-Tex Floor Compound is more economical, too! It bulks lighter—a pound goes two to four times further than ordinary oil-absorbents!

Send for FREE test package —WRITE TODAY TO

LACEY-WEBBER CO.
KALAMAZOO • MICHIGAN
AUTOMOTIVE AND SCIENTIFIC APPARATUS AND PLASTIC MOLDING

(Continued from page 246)

down in some City departments.

But the members of the controlling Board confirmed Mr. Nickle in his position, had his title changed from Chief Purchasing Agent and and Superintendent of Stores, to Director of Purchases and Stores, and gave him a freer hand than ever. The significance of the change of title is, that it implied raising his service to the rank of a "Department". "We hope we shall be able to keep you here for many years," the chairman of the Board told him then.

As that Board is solely interested in keeping down expenses and avoiding waste and leakage, the remark speaks for itself.

* * *

TOUGH METALS FROM POWDER

MAKING tough metal from powders makes possible the low-cost and long-lived electric lamps now in use. Heart of an incandescent lamp is the glowing filament made of tungsten wire. Tungsten is the most suitable material for filaments because it will not melt at the high temperatures caused by the electric current but this same quality makes it expansive and troublesome to melt and cast.

Powdered tungsten provided a way out of this difficulty. Tungsten ore, a coarse brown powder, is chemically treated to convert it into yellow tungstic oxide, also a powder. This is put into metal "boats" and placed in air-tight steel pipes enclosed in gas-heated furnaces. The "boats" are moved forward through the pipe into higher and higher temperatures while hydrogen gas flows over them. This removes all water and oxygen and leaves pure tungsten powder.

Put In Metal 'Bottle'

Then the powder is squeezed with pressures of 20 tons per square inch to form it into a two-foot long bar less than a half inch thick. This bar, resembling a cake of compressed talcum powder, is baked in a hydrogen furnace and then placed in a hydrogen-filled metal "bottle" while an electric current is passed through it. For the first time the material takes on a metallic appearance.

Next the bars are heated and hammered into rods which can be drawn into wires one-fifth the thickness of a human hair. In the last stages the tungsten strands are pulled through tiny holes in diamonds so that the metal crystals are elongated and plaited into each other, just as manila rope is made strong by twisting thousands of fibers together.

This material is stronger than the highest grade of steel used in building bridges and skyscrapers. An inch-square bar of tungsten, for example, can stand a pull of 250 tons, while the highest grade of structural steel snaps under a load of 100 tons.

* * *

COPPER RECOVERY

THE extent to which the War Production Board's copper recovery program is aiding the Nation's war industries is shown by the fact that to date 197,000,000 pounds of "idle and excessive" copper, both in primary and fabricated forms, have been allocated for war use.

The amount, WPB announced, represents two-thirds of the total amount of copper thus far reported under the program. Of the remaining 100,000,000 pounds reported, approximately 36,000,000 pounds consist of assembled products contaminated with materials not suitable for copper scrap. Arrangements for the movement of the balance are currently being made at Copper Recovery Corporation.

* * *

EXTENDS TOOL LIFE

A method of adding a paper-thin layer of chromium to worn tools and dies so they can "work thousands of hours of overtime" in the production of Army ordnance equipment was described recently by Edward J. Stone, manufacturing engineer at the East Springfield, Mass. plant of the Westinghouse Electric and Manufacturing Company. This plating method, so successful that tools and gauges have been reclaimed from the scrap pile and put back to useful work, has been a great salvation for over-worked machines and machine tools.

In these days when replacement parts are hard to obtain and delivery dates are so far off, salvaging tools by plating has assumed an important role in helping us to maintain production quotas. Mr. Stone said that chrome-plated tools outlast unplated tools by as much as 20 to 1. Some tools can be reequipped for many hours of production by the addition of only one to three ten-thousandths of an inch of chrome or one thirtieth the thickness of a human hair. The heaviest plate used principally on gauges, is five-thousandths

(Continued on page 250)

In World War I, Wakefield made riding lights, bulkhead lights and "blinker guns" for the Navy. Today we're in war service again.

First in Peace . . . First in War . . . Wakefield

WE'RE mighty proud to be the first in our field to fly the Army and Navy "E". This tops a series of Wakefield "firsts" which have brought the benefits of improved lighting to millions through our 37 years of peace and war service.

We're especially proud of this honor:

Because we know that our equipment has helped save fighting ships and the lives of your sons at sea; because we're helping others to do their best in the battle of production.

Because to us it stands for the untiring efforts of all our workers . . . for their readiness to work long hours at any time, if necessary to get the job out . . . for their willingness to switch to new duties, even at a temporary personal loss . . . for their loyalty which has put aside grievances, never letting them delay war production.

Because it stands for ingenuity in making available equipment perform new work to speed delivery . . . in developing new equipment to fit wartime needs and conditions.

Because, more than ever, it makes us conscious of our part in the war effort, and eager to do all that we can on Today's Biggest Job.

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★ **Fluorescent and Incandescent Lighting Equipment for War Production, Damage Control Lights, Binocular Blinker Lights, Mine Buoy Lights, Army Marker Lights, Floating Lanterns, Cabin Lights for Liberty Ships and troop transports, Airplane Motor Parts, Navy Blackout Shields, Blackout Trouble Lights, Lighting Specialties for Military Use.** ★

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There are more than 100 adhesive coating and impregnating fluids, sealants and sprayon insulators in the 3-M Adhesive Line made from reclaimed rubber, synthetic rubber, synthetic resins and non-rubber materials.

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Saint Paul, 6, Minnesota
ADHESIVE DIVISION, DETROIT, MICHIGAN

P 743

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Department.....

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City..... *Zone*.... *State*.....

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(Continued from page 248)

to six-thousandths of an inch in thickness.

Chrome-plating cannot be applied to every tool, Mr. Stone warned. In order to produce a tool to give the required service, the plater should know what is going to be required of the tool, what material it is going to machine and what parts of the tool are going to do the cutting and have to stand the chip friction. Plating is accomplished by immersing the worn tool or die, surrounded by a coil of wire, in a solution of chromic acid. A high electric current passing through the coil drives the chromium from the solution and onto the tool at the rate of one-thousandth of an inch per hour. Plating at a faster rate results in softer plate, the engineer said.

* * *

IMPORTANT WAREHOUSE LAW

(Continued from page 98)

which resulted in the warehouseman's liability.

The same law is applicable to damage to goods caused by floods. Many higher courts have held, for example, that a warehouseman is not negligent in failing to remove stored goods during the early stages of an unusual flood, where no danger may reasonably be anticipated. However, if warning and notice are given of its approach and the warehouseman has ample time and opportunity to save the goods by using "ordinary care" then he is liable for their loss or damage.

In other words, a warehouseman is *not* ordinarily responsible for loss resulting from an act of God. Therefore, in the early stages of a flood where it may be reasonably anticipated no danger will occur, it is *not* negligence on the part of the warehouseman in failing to remove the goods from the dangerous location. And particularly it is held that a warehouseman exercises "ordinary care" and, therefore, is not liable for loss if the issued reports of the United States Weather Bureau is erroneous.

For instance, in Merchants Storage Company v. United Company, 131 S. W. (2d) 469, it was disclosed that a patron stored 760 bags of seed potatoes with a warehouseman. The potatoes were stored in a suitable room in the warehouse basement and they were destroyed by the unprecedented flood in Louisville in January, 1937.

The patron filed suit against the warehouseman to recover the value of the potatoes, amounting to $2,494, and alleged that the loss of the potatoes was due solely to the careless and negligent manner in which the warehouseman stored and cared for them. However, the higher court refused to hold the warehouseman liable, and said:

"The evidence shows defendant (warehouseman) used that degree of care exercised by ordinary careful and prudent persons under the same conditions, the court should have instructed the jury to find for the defendant."

Validity of Limitation Clauses

Frequently, warehouse receipts contain clauses intended to limit liability in event the goods are damaged, lost, stolen or destroyed by fire. Briefly, a clause of this nature is valid if (1) the owner of the goods agreed to its provisions; (2) the charges are based upon the specified limited valuation and the owner is privileged to pay a higher storage rate and is given a higher valuation; and (3) the provision in the limitation clause is reasonable and not against public policy.

For example, in Voyt v. Bekins Moving & Storage Company, 127

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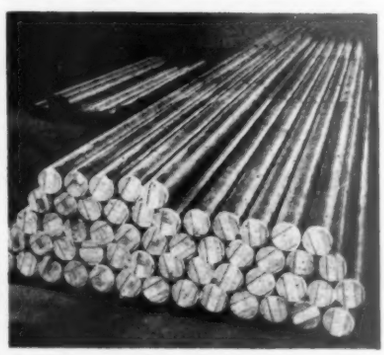

Welded Stainless Tubing

4" to 14¾" O.D.

Uniformity in roundness and in quality of welding characterizes Pittsburgh Piping Welded Stainless Tubing. Available in most stainless alloys, in sizes 4" O.D. to 14¾" O.D., and in wall thicknesses ranging from 7/64" to ½". Write for data sheet.

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HE DESIGNS PIPING . . . One of the most important parts of his job is making dead sure that the strength of every part of the system is equal to the strain imposed on it.

WeldELLS and other Taylor Forge Welding fittings* are in key with this:

—They have extra reinforcement of the inner wall where stress is greatest.

—They have full pipe thickness at the outer wall.

—They have tangents that keep the weld away from the zone of greatest stress.

—They meet every condition; are made in a wider range of sizes, materials and thicknesses than any other welding fittings.

In short, they are the fitting that gives the engineer *everything* he wants—at no extra cost.

• The list of Taylor Forge's contributions to the war effort only begins with WeldELLS. Every Taylor Forge product is playing a vital part. One of many examples is Forged Steel Welding Nozzles, essential to hundreds of transports and fighting ships.

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* WeldELLS and many other Taylor Forge products are produced in Byers Genuine Wrought Iron.

★ WeldELLS have every feature found in any welding fitting; some features found in no other fittings:

• **Seamless** — greater strength and uniformity.

• **Tangents** — keep weld away from zone of highest stress — simplify lining up.

• **Precision quarter-marked ends** — simplify layout and help insure accuracy.

• **Selective reinforcement** — provides uniform strength.

• **Permanent and complete identification marking** — saves time and eliminates errors in shop and field.

• **Wall thickness never less than specification minimum** — assures full strength and long life.

• **Machine tool beveled ends** — provides best welding surface and accurate bevel and land.

• **The most complete line of Welding Fittings and Forged Steel Flanges in the World** — insures complete service and undivided responsibility.

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ARMSTRONG TOOL HOLDERS
will carry you thru the War and also the Reconstruction

Great as has been the demand for ARMSTRONG TOOL HOLDERS for tooling new lathes, planers, slotters and shapers; and for re-tooling thousands of existing machine tools for new war work, no vital war work has been held up for want of them.

In the universal use of these efficient multi-purpose tools lies one of America's great industrial advantages—America's ability to (1st) change-over immediately to the manufacture of war tools, jigs and fixtures, (2nd) the ability to safely step-up speeds and feeds to the full capacity of the machine tool—for ARMSTRONG TOOL HOLDERS will stand up to any cut a machine can attain, (3rd) the ability to make each ounce of critical high speed steel do 10 times the work it can do in countries dependent on hand forged tools —

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When the war is won these same ARMSTRONG TOOL HOLDERS will give America the same advantages in changing back to peacetime industry . . . for ARMSTRONG TOOL HOLDERS are permanent tools that give many years of service.

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Eastern Warehouse & Sales:
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New York

Buy ARMSTRONG TOOLS from your Supply House

(Continued from page 250)

Pac 2d, 360, the testimony disclosed facts, as follows:

The warehouseman issued a warehouse receipt containing a clause, as follows: "The responsibility * * * is limited to $10 per hundred pounds unless the value thereof is made known at the time of storage and receipted for in the schedule an additional charge will be made for higher valuation."

However, the owner of the goods was never requested to and did not sign the warehouse receipt. Therefore, the higher court held the warehouseman liable for full value of the goods stolen from the warehouse.

Protective Provisions

Another important element of law is where the owner of goods actually signs a warehouse receipt, and later contends that he did not know the limitation clause was there. For this reason such protective provisions are void unless printed in bold and conspicuous type, or unless the warehouseman directed the owner's attention to the limitation clause.

The same law is effective with respect to ordinary signs, or notifications.

For example, in Denner v. Cull, 7 Colo. 248, it was disclosed that there was a notice posted above the window containing a limitation of liability to $25. The purchasing agent of the goods did not see the notice and had no actual notice or knowledge of the limitation. The court said:

"In such cases contracts limiting liability for negligence are generally against public policy."

Also, see Jones, 68 Mont. 231, where the owner of goods did not sign the receipt nor was his attention directed to a limitation clause which provided that liability in case of loss is not to exceed $10. The court said:

"The decision in the instant case is squarely on the principle that without actual knowledge and assent by the bailor to the conditions there is no creation of a contract limiting the bailee's liability."

* * *

THE OTHER SIDE OF THE HILL

(Continued from page 100)

black smoke pour from its chimney may be aroused to the fact that it is throwing away good money.

All these were frontiers—things the other side of the hills—until some enterprising galoots scrambled

(Continued on page 254)

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NUTS & BOLTS
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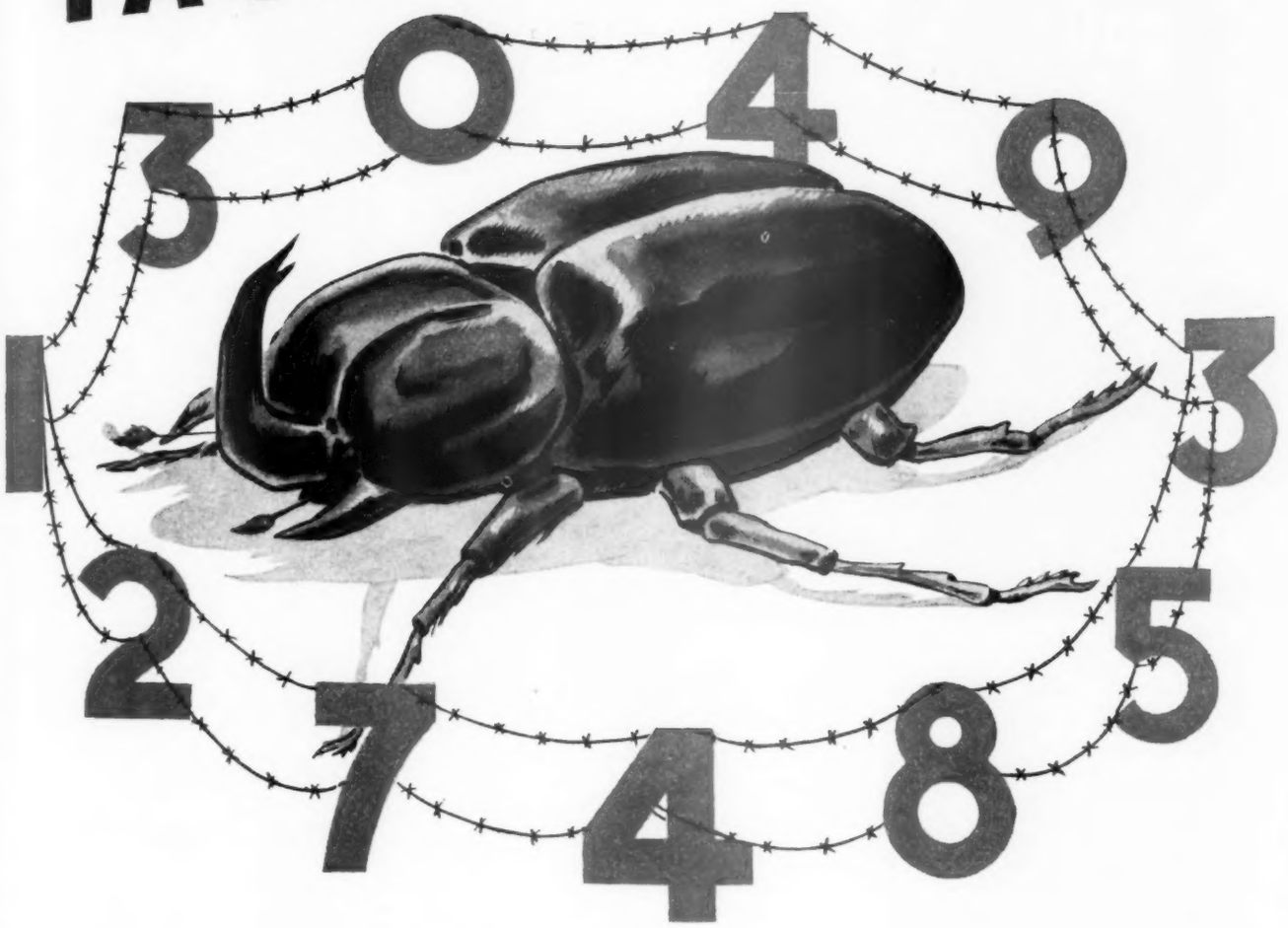
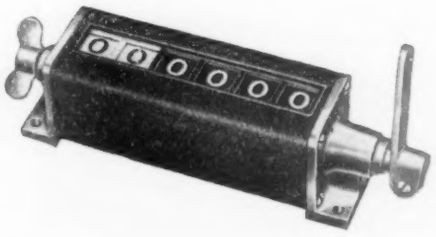


There's not any room, today, for bugs in war production Not even for the simple, routine bugs that only call for quick machine-adjustments. And particularly not for the japanese beetles and german plant lice of deliberate sabotage.

But there's room . . . *in fact, there's a definite place* . . . on every production machine for a Veeder-Root Counting Device that will put the finger on all kinds of bugs, as soon as they show themselves, and keep them from working into the danger zone. It's easy, quick, and inexpensive to give machines this protection . . . without disturbing schedules. And then you will have them equipped for effective *counter espionage*", so that they can warn your production men at the first sign of attack from any quarter. If your machines count heavily in the war effort, then you can count on Veeder-Root to help you, *right now*.



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In A P S, a thick (20 lbs. per square) protective coating is BONDED DIRECTLY TO THE STEEL at high temperature. Into this coating is impregnated a special mica finish, which adds further protection and improves appearance.

This protected metal withstands all extremes of weather, as well as acid fumes, corrosive dusts and salt air.

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Its low first cost is practically the only cost, because A P S requires no painting when erected or thereafter, and gives years of maintenance-free, satisfactory service!

A P S can be obtained in stock sizes from leading distributors throughout the country.

Write for new descriptive folder or Engineers' Handbook No. 5

Ad No. 6

PROTECTED STEEL PRODUCTS CO.

General Office and Plant, WASHINGTON, PA.

(Continued from page 252)

up one side to see what was on the other. No Purchasing Agent will ever live and be on the job long enough to explore all the frontiers ahead of him; but, with managerial imagination and insight back of him he has a chance to go places and do things. A Purchasing Agent is a one-man laboratory without test tubes and retorts—except when the boss gets too gay.

Frontiers at Home

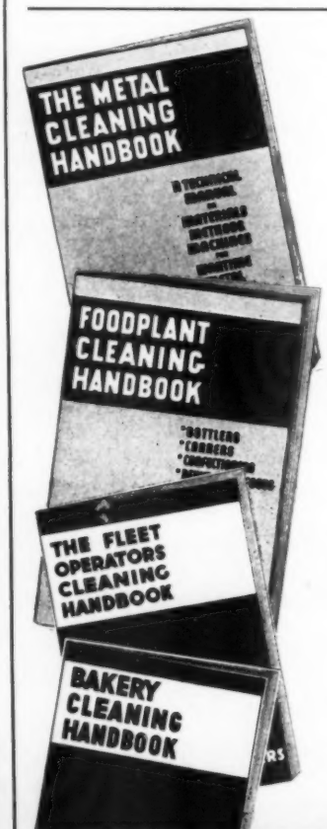
Every factory has frontiers within its gates; and the commonest is getting so used to its equipment that the squeaks and rattles are unheard. Not so long ago, with business not too good, a big printing concern, faced with prospects not too rosy, slapped one million bucks down on the barrel-head, threw out all its old presses, squeaks and all, and put in a whole new battery of the biggest, fastest, most efficient machines money could buy. What that move did to the arch-enemy of manufacturing, Uncle John Q. Overhead, was just nobody's business.

Some years ago I was visiting an old established business where I was lucky enough to get some early training. One of the officers said to me: "Ford, we did a pretty radical thing last year." I asked him what. He said; "We separated sheep from goats. We went over every department in the place with a fine-tooth comb. If it wasn't holding up to a pre-determined standard, out of the window it went—no time to fool with it. Then we went to town with those that were left." The net result in about ten years was: that house went from a more or less locally circumscribed business with about 150 salesmen to a nation-wide field with 450 salesmen. Canada to Mexico, Atlantic to Pacific. You can buy its products in any metropolitan store, and any cross-roads ranch supplier.

Buying Frontiers

No, brother, when you are entrusted with the job of getting goods for factory, wholesaler or retailer, you are going to need a well-nourished imagination and an intolerable itch within your bootsoles. The smallest buyer will have his frontiers. They may not be so big nor so far off, but there they are. There will always be the hills with something mysterious and enticing on the other side. The little buyer who explores his narrow frontiers is the guy that later conquers the

(Continued on page 257)



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We are following three basic principles in our post-war planning:

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3. A complete new development department . . . for better products.

We would like to tell you *now* about the wide variety of products for key industries on which our capably staffed and completely equipped New Development Laboratory is working. But announcements of these must await the return of peace.

Meanwhile, our development department will be glad to work with you in more than merely *talking* about post war planning.

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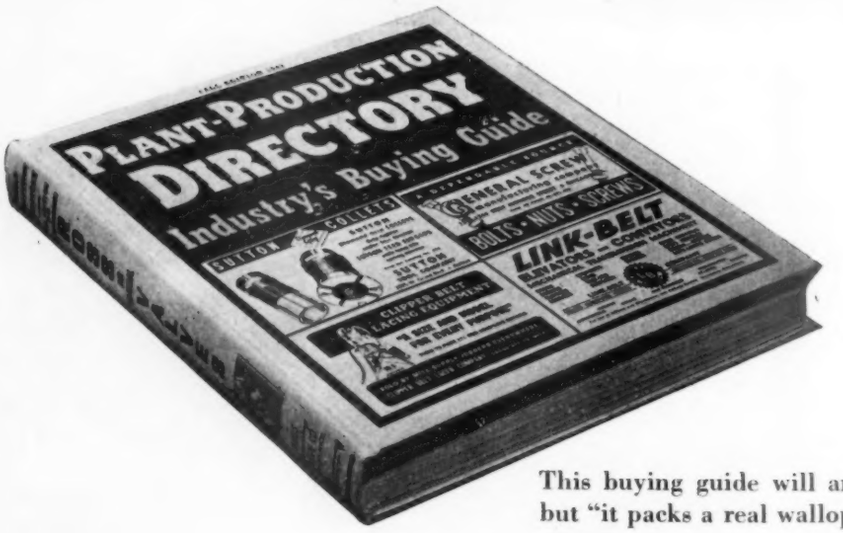
and Here's a Bet, You'll Never Use Anything Else



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PLANT-PRODUCTION DIRECTORY

A CONOVER-MAST PUBLICATION

(Continued from page 254)

wide frontiers. But the same itch and the same imagination are necessary.

We will have to trade with the world, and the world with us. We have beef to sell—or will have—and so does Argentina. When we set up the alibi of possible hoof-and mouth disease against foreign beef, we lay ourselves open to the charge of hoof-in-mouth that seems to afflict so many of our public men. There are other lands with other goods, all wanting us to buy, while we have a multitude of things to sell them.

Such situations might be ironed out by competent serious minds, if the politicians would only use the same imagination that will be demanded of the Purchasing Agents. One little import of anything that might be raised on a Kansas farm or an Alabama cottonfield is magnified to a threat of ruin. A certain farmer sued one of the southern railroads for the price of a hog which rashly tried to crowd a train off the track. The attorney for the railroad, in his speech to the jury, said: "Gentlemen, you have heard the testimony regarding this hog. It is shown to have been a razor-back. Now we all know that the razorback is the lowest form of hog. He is a long, lean, scrawny animal with a row of bristles along his spine. You can't fatten a razorback; you can't cross him with any of the better breeds and get progeny worth a damn. But, gentlemen of the jury, let a railroad cross that hog, and he at once becomes the peer of any hog in creation."

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Tiny glass jewels, formed under heat and polished by flame, have replaced sapphires as bearings in manufacture of many combat instruments produced for the Army and Navy at the Westinghouse Meter Division at Newark, N. J. Introduced because the war made sapphires difficult to import from Switzerland, the American-made jewels probably will be retained after the war for many electrical instruments. In certain instruments glass jewels produce less over-all friction than sapphires.

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The metal to be used in a particular Jelliff basket is determined by the cleaning and pickling cycle. It is obviously impossible to lay down any hard and fast rules, due to the wide variance in such influencing factors as construction of parts, character and strength of solution, methods of handling, temperature, possible galvanic action, etc. If you supply us with these essential facts, we will recommend the basket best suited to your needs.

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• FAST
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PERMAG Cleaning Compounds

— are doing important work these days in plants producing war material.

There's a PERMAG Compound made for all cleaning purposes. Many customers use PERMAG for cleaning metal prior to finishing. PERMAG Compounds are also used for plant maintenance — general cleaning, floors, walls, corridors, lavatories, etc.

There are over 300 PERMAG Compounds made by the Magnuson Corporation to cover every phase of cleaning in every field of industry.

If you have a hard cleaning problem, we have the answer. Write us.

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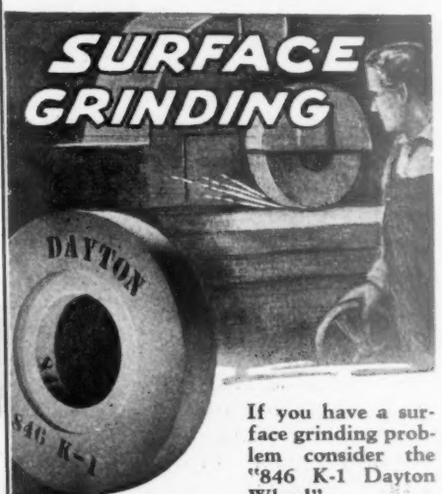
SURFACE GRINDING



If you have a surface grinding problem consider the "846 K-1 Dayton Wheel".

For precision grinding of hardened steel parts, it is unsurpassed, especially where high finish and production speed is essential.

For surfacing of mild steel, it is likewise extremely efficient . . . maximum stock removal with minimum wheel wear . . . reduces down time for wheel change.

Outline your surface grinding problems. Perhaps the Dayton "846 K-1" will solve it.

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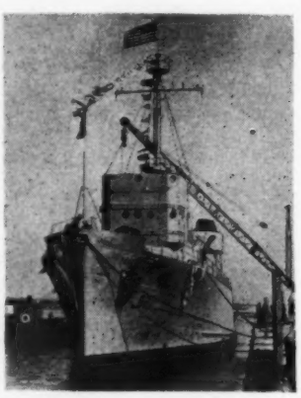
DAYTON GRINDING WHEELS

(Acme Photo)

Launching scene of the first PCE boat (Patrol Craft Escort) built on a production line in the Pullman-Standard Car Mfg. Co. shops on the south side of Chicago. The ship was built piece-by-piece in a factory, then assembled and welded at water's edge. Two Hundred Forty Two Meyercord Decals provide interior markings.

Shipbuilders are speeding the war effort by using durable, quickly applied Meyercord Decals instead of slow, laborious hand stenciling for interior markings on escorts, mine sweepers, merchant vessels, and aircraft carriers. *Hundreds of man-hours* are saved in applying Decals in one simple, quick operation. Decal lettering provides uniformity and greater visibility at lower cost; easier, faster replacement, and simplicity of maintaining reserve supply aboard ship. Whatever *your* identification needs . . . nameplates, trademarks, signs, insignia . . . dial faces, instrument panels, etc., . . . Meyercord Decals will do the job. They're adaptable to any surface, washable, durable, uniform, highly visible and permit use of any color. No sharp edges, screws, bolts or rivets. Consult Meyercord Decal Engineers on your requirements. No obligation. Address Dept. 1097.



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SEGREGATING NON-FERROUS SCRAP METALS

Its Importance to the War Effort, and How You Can Financially Benefit from It

By C. F. WILLIAMS

Consultant for WPB

Much has been said and written on the subject of "segregation" of non-ferrous scrap metals but from what the writer has been able to observe, it seems quite evident it has gotten confused with "separation." In other words, many plants in handling scrap metals stop at *separating* and do not follow through on the finer and more important job of *segregation* according to alloy to the point where the scrap not only becomes more useful for direct re-use, but is also more readily salable and will insure a greater financial return in scrap value. Thousands of dollars in added profits, together with man and furnace hours, have been lost on this account.

Copper, for example, may be separated from brass; aluminum from zinc, etc., etc., overlooking the important fact that in these and other groups there are many grades of different alloys containing critical metals needed today. While the technique in properly segregating non-ferrous metal is rather involved and requires considerable education, yet it is well worth the effort in terms of higher prices received for the material when it is properly segregated.

A lot of plants are inclined to treat scrap lightly and throw their so-called "scrap" into one heap. This is costly practice, because it requires double the time and expense to sort, which is necessary before re-melting; and when a buyer is fixing a purchase price on such a heap, he will, and with good reason, bid on the basis of the lowest grade in the pile.

Full Time Man

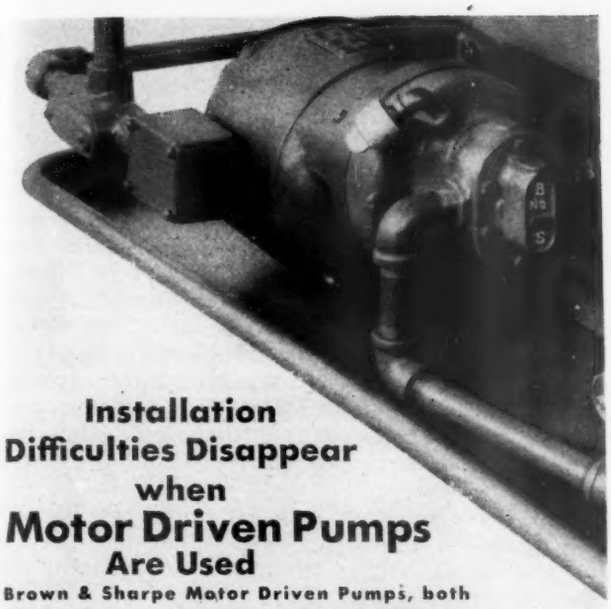
Many firms that generate large volumes of industrial shop scrap, turnings, etc., have found it very profitable to place an experienced man on full time in charge of a salvage and scrap program. In addition to the financial gain obtained by such action, it also warrants the cooperation of various Governmental agencies, who are attempting to see such programs through, and who have available statistics that prove that any deviation from such segregation program will only lead to future critical shortages. To carry out successfully an intensive segregation program everyone in the organization must be made *scrap conscious* so that as they go about their duties from day to day their first interest will be to conserve wherever possible, and, consequently avoid waste.

Take the copper group. Here is found at least eight different grades ranging from pure copper down to a grade running 30% copper content, and in scrap value the range is approximately 4.75c per pound or $95.00 per net ton. These grades under OPA ceilings range from 9.75c for No. 1 grade, to 5.10c for insulated copper.

One of the most critical metals is copper, used either in its pure state, or as the base metal for brasses and bronze. The demand for copper is beyond supply, and will continue so just as long as this war is on.

Then we come to the scrap brass and bronze group—here we encounter innumerable grades with varying

(Continued on page 260)



Installation Difficulties Disappear when Motor Driven Pumps Are Used

Brown & Sharpe Motor Driven Pumps, both Rotary Geared and Centrifugal, are suited for mounting in almost any convenient position on the machines they serve. Illustration shows geared model installation—horizontal mounting. Send for catalog listing complete line of Geared, Vane, Centrifugal and Motor Driven Pumps. Brown & Sharpe Mfg. Co., Providence, R. I., U. S. A.

B·S

BROWN & SHARPE PUMPS

BREATHING HAZARDS?

CONSULT PULMOSAN!

Photo Courtesy Hercules Powder Co.

Getting the right respirator for your needs — and getting it when you need it, is important in today's rush war production. Pulmosan can take care of you on both counts. In the extensive line of Pulmosan Respirators are types and styles for EVERY breathing hazard — ready for prompt shipment to war plants.

Submit your breathing problem to our engineers. Let them recommend and supply the correct Pulmosan Respirator for your particular conditions. Write for booklet showing full line of Pulmosan Respirators. Pulmosan Safety Equipment Corp., Dept. P, 176 Johnson St., Brooklyn, N. Y.

PULMOSAN RESPIRATORS

FOR DUSTS, FUMES, GASES, SMOKE, SPRAYS

ALL SET FOR THE WET

FROG BRAND MAKES WET BEHAVE

No matter where it may be found, Sawyer's Frog Brand Oiled Work Clothing is in complete control of "The Wet". Today much of Sawyer's production is devoted to the War Effort, but there are still many models of Frog Brand Oiled Work Clothing available to men in industry who must work under "Wet" conditions.

For information write:
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FROG BRAND OILED CLOTHING

PAGE for WIRE

Today's production of **PAGE WIRE**, of course, is directed to the war effort and to essential industry—whether it be Stainless Steel Shaped Wire, Carbon Steel Shaped Wire, Welding Wire or such general items as Spring Wire, Bond Wire, Telephone Wire, etc.

As examples: (1) the springs used in a rifle that has attained a world-wide reputation for its performance in battle, are Page Stainless Steel Spring Wire; and (2) a special electrode developed by Page for welding armor—a contribution to the production of tanks.

★ ★ ★

Although completely occupied with the war effort, you will find our organization well able to work with you on plans you may have for the use of wire after the war.

PAGE STEEL AND WIRE DIVISION

Monessen, Pa., Atlanta, Chicago, Denver, Los Angeles, New York, Pittsburgh, San Francisco, Portland

In Business for Your Safety

AMERICAN CHAIN & CABLE COMPANY, Inc.
BRIDGEPORT • CONNECTICUT

(Continued from page 228)

percentages of copper, lead, tin and/or zinc, and values ranging from approximately five cents to fifteen cents per pound, or, surprising to many, as much as $200 net ton.

In the reclamation of various alloys from scrap returned to the refinery, there are many grades which, on the surface, appear similar, and as a consequence, are thrown together. In many instances this method is satisfactory; however, there is a great percentage of such mixtures which, if kept entirely segregated, would be useable in the production of higher grade alloys. There is, without question, great difficulty when running a large factory and machining or processing many different kinds of brass and bronze mixtures to segregate each and every one; but, as time goes on, it becomes more and more apparent that this effort will have to be made.

All brass and bronze specifications, as issued by Governmental sources, are very definite and strict, and, as a consequence, the mixture of any quantity, even though small, of any off-grade stock may to a great extent void the use of a considerable quantity of otherwise good scrap for use in any specific alloy. When this occurs, it is necessary to up-grade the mixture in which such contamination occurs by the addition of two very critical materials, that is, copper and tin, to bring the ultimate alloy within such specifications. If the original scrap metals had been properly segregated, it would be possible to use it strictly as scrap without the extra addition of copper and tin, and it would also avoid the necessity of processing into ingots. Failure to make such separation, constitutes a waste of copper and tin, which otherwise could have been avoided.

In addition, this group embraces lower grade copper bearing metals in the form of grindings, skimmings and slag, etc., which is sold on copper content basis to which to insure maximum returns close attention should likewise be paid so that the better grades do not get mixed with the poorer ones. In other words, the copper content, which determines the value, will greatly vary depending on whether the residue emanates from red or yellow brass and, of course, the contained metallics—this is especially true where large tonnages are generated.

Now we come to the important group of aluminum alloys. I have heard the remark that "'Hell', we will have so much virgin aluminum that scrap won't be worth a 'damn'." It is true that we have an unprecedented production of virgin aluminum, but we likewise have an unprecedented demand, and secondary or scrap aluminum will always have a most important place in the picture.

This group is the most difficult to handle, from an economical standpoint, and because of its lightness and difficulty to identify in mixed lot, it is doubly important that it be segregated at the source. The grades in this group with corresponding present market values in less than one thousand pound lots range from 10c for plant scrap solids to 6.50c for borings and turnings.

The remaining lead group is the easiest of all to handle, there being comparatively few grades, each of which is readily identified by the particular use to which it had been put. These grades with corresponding approximate market values are soft lead scrap 5.95c; hard lead scrap 5.95c; battery lugs 5.85c; battery lead scrap 3.50c.

What is true of non-ferrous scrap metals is equally true of iron and steel and all other grades of scrap. It cannot be emphasized too strongly that the scrap of

today may well prove to be the raw material of tomorrow. Our ally, Canada, actually has a law which makes it mandatory to segregate. We, in the Industrial Salvage Branch, prefer to see it practiced on a voluntary basis, but, in any event, present and post war economics make it imperative to get the most out of scrap. It would be wise to start now.

For plans and methods of accomplishing proper segregation, you are invited to avail yourself of the services of trained technicians in the Industrial Salvage Branch, Salvage Division, War Production Board, who have practical training and will be glad to give you the benefit of their experience.

FORMING PLYWOOD PARTS BY FLEXIBLE PRESSURE

TECHNIQUES in forming curved plywood parts are making such rapid strides that the visions of this week may become the facts of next week, declares Thomas D. Perry, of Resinous Products and Chemical Corporation, Philadelphia.

Curved plywood has long been used for pianos, radio cabinets, doors, and other household items, stated Mr. Perry, but not until the recent development of molding complex curved forms with "flexible pressure" have plane fuselages, Marine assault boats hulls, gliders and other vital plywood military parts become possible. The "flexible pressure" method has been recently pushed to commercial production so that the relatively plentiful supply of plywood materials, equipment, and manpower could be completely utilized to replace scarce metals wherever possible.

The older method of gluing sheets of veneer into ply-

(Continued on page 264)

FOR VICTORY BUY UNITED STATES WAR BONDS AND STAMPS

For special heads, threads, finishes, etc. — on fastenings of any metal or alloy adapted to cold-upset—depend on Progressive. 25,000,000 is our weekly output; customer satisfaction our daily achievement.

The PROGRESSIVE MFG. CO.
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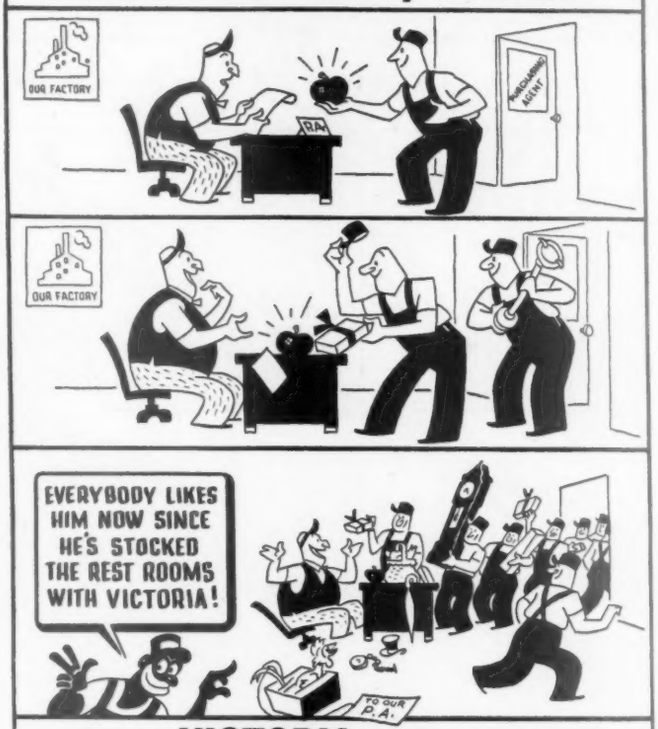
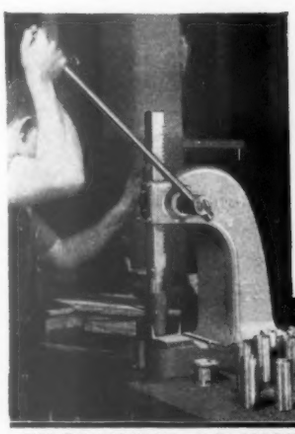
TISSUE TIPS by VICTORIA

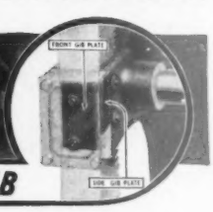


Specify VICTORIA TOILET TISSUES

Single Fold, Double Fold or Black Core—for dependable quality.
Victoria Paper Mills Co., Fulton, N.Y. Craftsmen in paper-making since 1880.

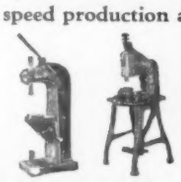


CHOOSE famco FOR More Production Greater Precision



EXCLUSIVE ADJUSTABLE GIB

Famco's exclusive front and side gib plate adjustments compensate for wear, eliminate "shimmy," and assure perfect ram alignment at all times. As in the above operation at the Mall Tool Company, Famco Presses speed production and increase precision. Famco builds 32 stock sizes of bench and floor model Arbor Presses . . . ½ to 15 tons pressure; and 10 sizes of Foot Presses, bench and stand mounted types. Write for details.



Floor Type Arbor Press No. 15 Foot Press

FAMCO MACHINE CO.
1313 18th St., Racine, Wis.

famco FOOT AND ARBOR PRESSES

TO HIT 'EM H-A-R-D-E-R

THE year 1943 promises to be the grimmest, hardest year this country has ever faced. Every effort, and every dollar, of national income not absolutely needed for existence, should go into war work and War Bonds.

In the Pay Roll Savings Plan, America finds a potent weapon for the winning of the war—and one of the soundest guarantees of the preservation of the American way of life!

Today about 30,000,000 wage earners, in 175,000 plants, are buying War Bonds at the rate of nearly half a billion dollars a month. *Great as this sum is, it is not enough!* For the more dollars made available now, the fewer the lives laid down on the bloody roads to Berlin and Tokio!

You've undoubtedly got a Pay Roll Savings Plan in your own plant. But how long is it since you last checked up on its progress? *If it now shows only about 10% of the gross payroll going into War Bonds, it needs jacking up!*

This is a *continuing* effort—and it needs *continual* attention and *continual* stimulation to get fullest results.

You can well afford to give this matter your close personal attention! The actual case histories of thousands of plants prove that the successful working out of a Pay Roll Savings Plan gives labor and management a common interest that almost inevitably results in better mutual understanding and better labor relations.

Minor misunderstandings and wage disputes become fewer. Production usually increases, and company spirit soars. And it goes without saying that workers with substantial savings are usually far more satisfied and more dependable.

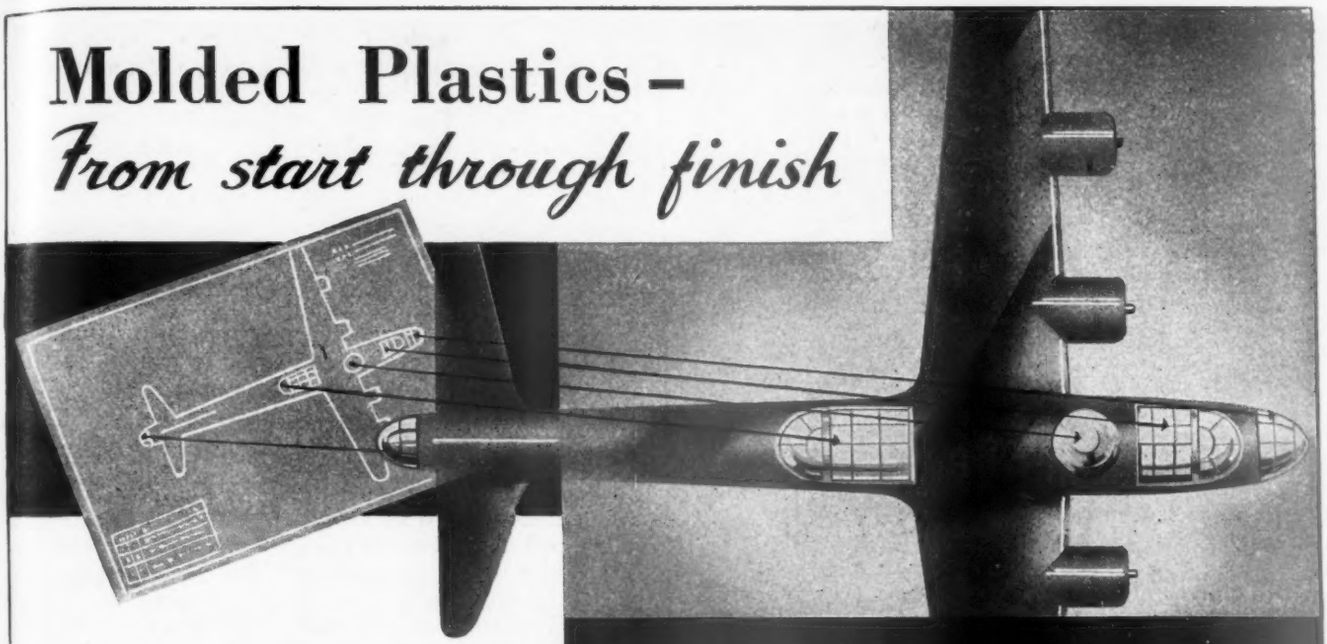
And one thing more, these War Bonds are not only going to help win the war, they are also going to do much to close the dangerous inflationary gap, and help prevent post-war depression. The time and effort *you* now put in in selling War Bonds and teaching your workers to save, rather than to spend, will be richly repaid many times over—now and when the war is won.

★ ★ ★

You've done your bit Now do your best!

This space is a contribution to victory today and sound business tomorrow by PURCHASING

Molded Plastics –
From start through finish



Plastics . . . by Reynolds . . . includes all skilled organization processes from original design, or redesign, straight into production molds and molding, all through satisfied customer delivery. Here is a complete service that will solve your plastic problems.

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DIVISION OF REYNOLDS SPRING COMPANY
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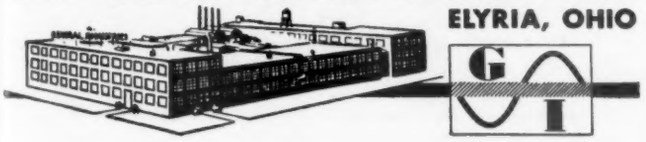
Reliable Performance Assured

If you require small power motors for war production, — reliable, quiet and smooth-running, — you will find General Industries fully equipped to meet your specifications. For many years G. I. motors have been acknowledged leaders because of their simple compact design, quality materials and excellent workmanship. The G. I. line includes many standard types and sizes; and if any of these should not fit your needs, G. I. engineers are available to develop a type suited to your particular requirements where quantity production is involved. You can be assured of every cooperation.

THE GENERAL INDUSTRIES CO.
ELYRIA, OHIO



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or the
STOP-WATCH of TODAY?

AMESACKS SPEED PRODUCTION

Use Amesacks to streamline both shipping and assembly. These industrial bags, designed to speed transportation of small parts, are now used within plants to speed assembly work.

Write for **FREE** ***SAMPLES***

★ ★ ★ JUST POP 'EM IN AND PULL THE STRING ★ ★ ★

AMES BAG COMPANY
1971 EAST 66TH ST. · CLEVELAND, OHIO

JIM, THE DRIVER . . .

One of a nation-wide army of 17,350 drivers, Jim is typical of the popular, courteous Railway Expressmen who stop at your home, store or factory—whenever there is a shipment to be picked up or delivered by Railway Express.

Jim is out in all kinds of weather—in rain, hail, snow, fog or thunderstorm. Being a Railway Expressman is his career, his life's work.

Today, the principal concern of the Jims of Railway Express is to keep the enormous flow of war materials moving swiftly and uninterruptedly.

BUY MORE AND MORE WAR BONDS

NATION-WIDE RAIL-AIR SERVICE

(Continued from page 261)

wood has been to apply pressure in one direction only, distributing the pressure through rigid plates or blocks, Mr. Perry explained. Simple though this method is, it is limited to forming curved pieces over a 90° angle, sometimes over a 120° angle. The "flexible pressure" method, on the other hand, can be used for curved pieces of irregular shape or for pieces requiring curves in more than one plane, such as an egg shell shape.

The fundamental principle of this method is using an inflated or deflated bag as one of the halves of a pair of molding dies. In making a boat hull, for instance, layers of veneer are "wrapped on" a convex mold with heat reactive resin between each layer. To mold the layers into a plywood shape, an inflated bag may exert pressure on one side, or the veneer-covered mold may be placed inside an open-mouthed bag, the bag deflated so that it adheres to the contours of the mold, and the whole inserted into an autoclave or "pressure cooker".

A third method of applying the flexible bag is to lay the veneer strips on a concave thin metal mold supported by cross frames and drape a rubber bag in the mold. When inflated, the rubber tightly adheres to the mold. In the autoclave, this latter method applies heat to "cure" the adhesive more rapidly than the first two methods.

* * *

RETURN YOUR CONTAINERS

All Steel Drums, Tight and Slack Cooperage and Cylinders Included in Returnables

IMPORTANCE of getting returnable containers back to suppliers promptly in order to ensure continued delivery of essential chemicals and allied products in wartime has been stressed in a joint statement by the Chemicals and Containers Division of the War Production Board.

The statement pointed out that the request for prompt return of containers by the users applies to steel drums that formerly were considered non-returnable, fiber drums, slack wood barrels, tight wood barrels and cylinders.

The Chemicals and Containers Divisions suggests that each user get in touch with his supplier to find out whether the supplier wants the containers back before making any other disposition of them. Containers should not be used by the purchaser of the chemical for other purposes without the specific permission of the supplier to do so, it was pointed out.

The following suggestions to users for returning drums were offered:

1. Have your supplier pick up your empty drums when delivering full drums, or return empty drums to the works or warehouse from which received.
2. Deposit charge will be refunded upon receipt of drums in good condition.
3. Do not use pressure to empty drums.
4. Drums should be kept clean, but do not rinse.
5. Do not use for storage or shipment of any other material.
6. In returning drums, replace and securely tighten both bungs.
7. In returning open-head drums, do not inter-

(Continued on page 266)

Putting Our Shoulder to the Other Fellow's Wheel!

Since the war, we have supplied parts to complete millions of pieces of war matériel. Being thus privileged to put our shoulder to so many earnest workers' "wheels" makes us grateful, indeed, for our long peacetime experience in manufacturing high grade screw machine products.

Outstanding "Newton" points: uniformity of size and finish, extreme precision when necessary, knowledge of all industrial metals, with special experience in aluminum . . . plus ability to understand what the customer wants!

Schedules are now full for several months ahead; but, if you need screw machine products up to ¾", contact us—just in case there might be an open spot.

NEWTON SCREW MACHINE PRODUCTS

THE NEWTON MANUFACTURING CO., PLAINVILLE, CONN.

Vascoloy RAMET

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LEADING THE INDUSTRY IN CARBIDE TOOLS SINCE 1930

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THE SUPERIOR TANTALUM-TUNGSTEN CARBIDE TOOLS

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PORTER TOOLS are portable

They bring great cutting power *to the job*—in the shop or wherever the work may be. They are easy to carry. They need no power source except hand power and they cut quickly even through ¾ inch annealed bolts. By means of a perfected toggle joint tremendous pressure is delivered to the special steel heat treated cutting edges. They cut rods, bolts, wires, cables and straps. With jaws of special design they squeeze, crimp and perform many other operations.

H. K. PORTER, INC.

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Porter tools are sold through leading supply and jobbing houses — subject to the restrictions of war production. Catalog on request—ask for our new maintenance book.

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Foreign Shipments are Packaged for Punishment

with STANLEY STEEL STRAPPING

There's no time for "kid glove handling" today at supply ports serving our armed forces. To reach their destination in usable condition, products must be packaged for punishment . . . for crushing, twisting, bursting strains unknown in normal commerce.

Yet package weight and bulk must be kept to a minimum, to save precious cargo space. The answer is Stanley Steel Strapping reinforcement. It provides the needed extra protection for the longest transit, the roughest handling.

Packing and shipping operations are speeded up . . . container cost and man-hours per unit are effectively reduced. Check up on its advantages for your shipments.

The Stanley Steel Strapping System includes tools and accessories for every type of shipping. Write for details.

1843 STANLEY 1943

PROMPT DELIVERIES to Plants engaged in War Production

THE STANLEY WORKS

STEEL STRAPPING DIVISION • NEW BRITAIN, CONN.

(Continued from page 264)

change lids or lever locks. Be sure to return lock with drum.

8. Use proper size valves in order to prevent stripping of threads.
9. Do not tighten bung plugs excessively as this may rupture flange threads or loosen the spud which would ruin the drum.
10. Use faucet or spigot provided with straight threads equipped with resilient gaskets. Faucets equipped with tapered threads may turn the spud in the drum, thereby causing leaks, with the possibility of ruining the drum.
11. If possible, store drums under cover to prevent rusting.

* * *

LEAD COATING IRON AND STEEL

Hot Dipping Done With Galvanizing Equipment Electroplating Also Successful

THE use of lead as a protective coating on iron and steel is not new but it is not as common as the more familiar zinc coating or galvanizing. Lead is known to be more resistant to atmospheric corrosion than zinc but the brighter appearance of galvanizing and the difficulty in obtaining a lead coating free from pin holes has retarded its use.

However, recent studies of lead coating processes have resulted in improved technique for hot-dip application which produces satisfactory results for many purposes. It appears that rust stains on the surface of hot-dip lead coated articles are superficial and generally soon disappear since the pin holes are apparently sealed by the products of corrosion.

One process now in commercial use is simple and is done with equipment of the same type as is used for galvanizing. The articles to be coated are pickled scrupulously clean. Placed in a perforated basket they are dipped first in dilute sulphuric acid, then in a weak solution of hydrochloric acid and finally in a bath of dissolved zinc ammonium chloride.

While still damp, they are then dipped into the coating pot which contains the lead at a temperature of from 675 deg. to 700 deg. F, upon the surface of which floats a layer of flux ⅛ in. to ¼ in. deep. This flux consists of about 85 percent zinc chloride and 15 percent ammonium chloride. The baskets are agitated in the coating bath for a period of about one minute. The articles are then removed and centrifuged to remove excess metal and, while still hot, may be tumbled to remove superficial discolorations.

Smaller Items Tumbled

Articles ranging in size from small washers to thin curved sections six to eight feet long are being coated by this process, but only the smaller items are tumbled. The presence of small amounts of tin, antimony, or certain other metals in the lead bath is advantageous. Several manufacturers offer lead alloys especially designed for use as a coating material.

Not only does the lead coating process compare favorably in cost with galvanizing but there are advantages over the other process. The work is done at lower temperatures and therefore under more pleasant working conditions. Lead does not corrode the iron dipping pots, nor does it dross and have to be reclaimed in a smelting operation.

The weight of a lead coating ranges between 50 and

(Continued on page 268)

HOLLOW SCREWS

ALLEN Products stand up to the stresses in war-driven machines *and* die assemblies. They hold parts together *"under fire"*, — preserve the strength and unity of each assembly. . . The well-informed Purchasing Official needs a handy, charted reference to Allen SPECIFICATIONS. 10-page Bulletin *awaits your request:* — includes standard dimensions of Allen Hollow Set Screws, Square Head Set Screws, Socket Head Cap Screws, Flat Head Cap Screws, Socket Head (*"Tru-Ground"*) Shoulder Screws, "Tru-Ground" Dowel Pins, Hexagonal Keys, Hollow Pipe Plugs. Send for this Data-bulletin today.

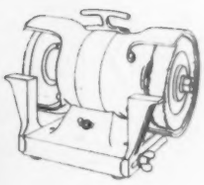
ALLEN Products sold only through local Allen Distributors.

THE ALLEN MFG. COMPANY
HARTFORD, CONNECTICUT, U. S. A.

GITS BROS. MFG. CO.
1865 South Kilbourn Avenue • Chicago, Illinois
30 years of oil cup experience

VARNISHED INSULATIONS To Meet Your Needs

"We use Irvington Straight-Cut Varnished Cambric between coils on Bench Grinder stators and as slot insulation between armature coils, because it is thin, has good dielectric strength and forms easily."
The Black & Decker Mfg. Co.



Irvington Varnished Cambric insulates the stator coils of Black & Decker Bench Grinders.

Many other electrical manufacturers also have expressed preference for Irvington Varnished Insulations based on superior physical and electrical properties and ease of application.

STRAIGHT-CUT VARNISHED CAMBRIC & TAPE

Irvington Straight-Cut Varnished Cambrics have high dielectric and tensile strengths, are smooth, flexible and highly resistant to acid, moisture and abrasion. In tape form they may be employed for either hand or machine taping over straight, even surfaces.

IRVINGTON BLACK STRAIGHT-CUT VARNISHED CAMBRIC, particularly resistant to lubricating oil, is recommended for use as slot and phase insulation; between layers of field coils and for overall coil wrapping.

IRVINGTON YELLOW STRAIGHT-CUT VARNISHED CAMBRIC is highly resistant to heat and insulating oil. It is, therefore, widely used on oil-immersed transformer coils. (And is an excellent insulation for magneto and ignition coils.)

BIAS-CUT VARNISHED CAMBRIC & TAPE

Irvington Bias-Cut Varnished Cambrics more than meet NEMA standards; have just the right combination of high tensile strength, elasticity and flexibility to permit tight, compact wrapping of irregular surfaces and contours. Even after stretching, these insulating materials retain a very large percentage of their original high dielectric strength.

BLACK BIAS-CUT VARNISHED CAMBRIC is generally used to lap wind armature, field and other coils; for bus bar and terminal insulation and for taping cable joints and connections.

YELLOW BIAS-CUT VARNISHED CAMBRIC readily lends itself to hand or machine taping of coils with irregular surfaces, angles or bends. It is especially suitable for use on windings which must operate in insulating oil.

OTHER IRVINGTON VARNISHED INSULATIONS: Oil-Immersed Varnished Cambric Tape, Varnished Cambric Cable Cloth, Varnished Rayon, Varnished Nylon, Varnished Cotton Cloth, Style "SIC", Varnished Fiberglas, Varnished Paper, Flexible Varnished Tubing, Irv-O-Slot (Slot Insulation).

For complete information on these Varnished Insulations write Dept. 76.

STANDARD OF THE WORLD
IRVINGTON INSULATION
TRADE MARK U.S. PAT. OFF.

Irvington
VARNISH & INSULATOR CO.
IRVINGTON, NEW JERSEY
PLANTS AT IRVINGTON, N. J. and HAMILTON, ONT., CAN.
Representatives in 20 Principal Cities

Sanitation is Safety!

YOU GET BOTH IN

FAIRWAY DISPENSERS

WITH THE FAMOUS

"TAMPER-PROOF TOP"

TOP LOCKS WITH REMOVABLE KEY
CLOSE FITTING DUST-PROOF CLOSURE
LARGE CAPACITY (1000 TABLETS) LESS FREQUENT REFILLING
TRANSPARENT WINDOW TO MAKE CHECKING SUPPLY EASIER
CLEAR TABLET RETAINER AVOIDS WASTE AND SPILLAGE
OPERATED BY ONE HAND
FAIRWAY SALT TABLETS

PROTECT your salt tablets and workers from contamination (accidental or intentional). Guard salt tablets like you would your water supply.

The Fairway Dispenser with its "Tamper-Proof Top" is designed to do a job with safety and economy.

FOR FEWER EMPLOYEES, USE THE

FAIRWAY MIDGET

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Dust tight, spill proof non-metal container. Tablets are FAIRWAY Combination (70% salt and 30% dextrose).

The Fairway Pocket-Pak is the answer to the need for economical, efficient sanitary tablet distribution among men in small isolated groups.

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Send for illustrated price list.

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Makers of STASAFE Products

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(Continued from page 266)

150 milligrams per square inch whereas zinc coatings usually run about 200 milligrams per square inch. In addition, lead outranks all other metals as a base for paint and requires no weathering or special preparation before painting.

Another means of depositing lead coatings on iron and steel is electroplating. Under certain conditions, hot dipping results in distortions or undesirable surface stresses which do not occur in electroplated objects. There is an increasing use of electro-deposited lead on laboratory apparatus, linings of gas shells, nuts and bolts, refrigeration brine tanks, and equipment used in viscose and other industries.

Although lead is not suitable for coatings on objects that require brightly finished surfaces and is not resistant to abrasion, its high corrosion resistance, ease of handling and plentiful supply indicate that recent improved application processes will make possible the savings of large quantities of zinc, cadmium, chrome, nickel, and tin which have hitherto been required for protective coatings on iron and steel.

Lead coated articles perform best under atmospheric exposure. They do especially well in industrial atmosphere contaminated with the acid fumes of sulphur.

The Lead Industries Association, 420 Lexington Avenue, New York City, will be pleased to answer any inquiries for additional information on lead coating practices.

* * *

RUBBER USED TO BE DOUBLED

World Need for Synthetic and Natural Rubbers Placed at 2,000,000 Tons Annually

WORLD consumption of natural and synthetic rubber after the war may reach a total of 2,000,000 tons a year, nearly twice as much as ever consumed even in the biggest years up to now, according to John L. Collyer, president of the B. F. Goodrich company.

In a talk before the New York State Chamber of Commerce on "the basis for a post-emergency policy in rubber," Mr. Collyer said he based this prediction on the assumption that sound policies would be followed and "low-cost rubber—natural or man-made, probably both—would be available throughout the post-war world."

He said it is "no longer a foregone conclusion" that the Japanese will destroy the Far East rubber plantations when they are driven out, since "we shall soon be able to rely upon synthetic rubber production, and therefore destruction of the trees would not have the effect now, as it once would have had, of seriously crippling the United Nations' ability to fight and win the war."

Mr. Collyer who was one of the earliest and most insistent pre-Pearl Harbor advocates of "standby" synthetic rubber plants in the interests of national security, recommended that the nation's synthetic rubber facilities be kept intact and in operation "on at least a limited basis, say 150,000 to 200,000 or more tons production a year," after the war. He declared that "it seems inevitable that the American people will want to continue at least standby operation of these plants—just as they will want to retain air bases and battleships."

He expressed the opinion that those responsible for

(Continued on page 270)

Output Increased with TUBULAR RIVETS

Don't use solid rivets—use tubular rivets with Chicago Automatic Rivet Setters, because tubular rivets with Chicago equipment speed up production and lower unit costs. Get all the facts, especially on your war products. Even though small solid rivets are specified, send us sample assemblies so that we can fasten them with proper tubular rivets and give you a production schedule. Then submit the tubular riveted assembly for governmental approval and you will invariably receive an O.K.

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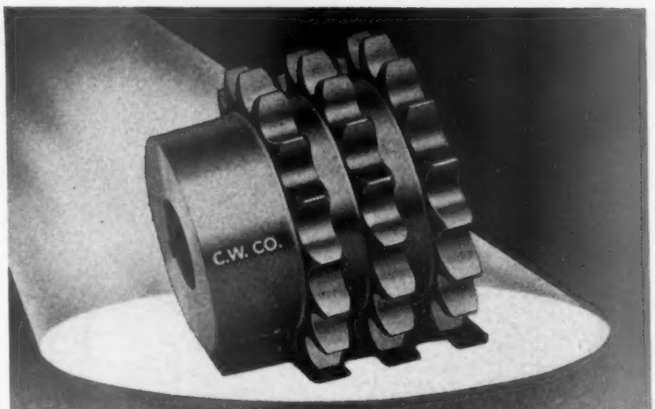

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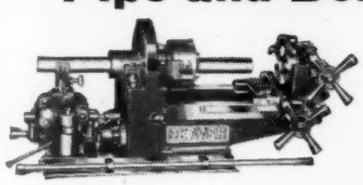
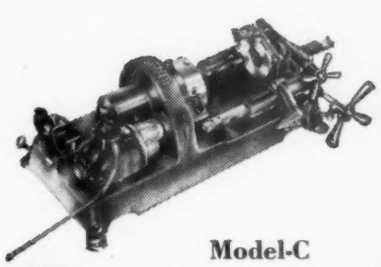


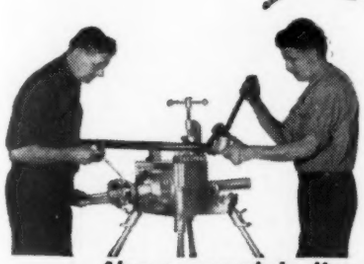
Model-A

A high-speed heavy-duty deluxe Pipe and Bolt Machine. Range ⅛ to 2-inch—up to 12-inch with geared tools and drive shaft. Bolts, ¼ to 2-inch. Wt. 415 lbs. Ask for Bulletin-A.

Model-B

A compact utility Pipe and Bolt Machine combining many features of Model-A with the easy portability of Model-C. Range ⅛ to 2-inch—up to 8-inch with drive shaft and geared tools. Bolts up to 1½-inch. Weight 280 lbs. Ask for Bulletin-B.





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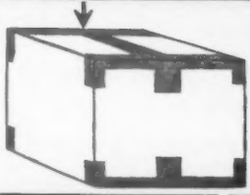

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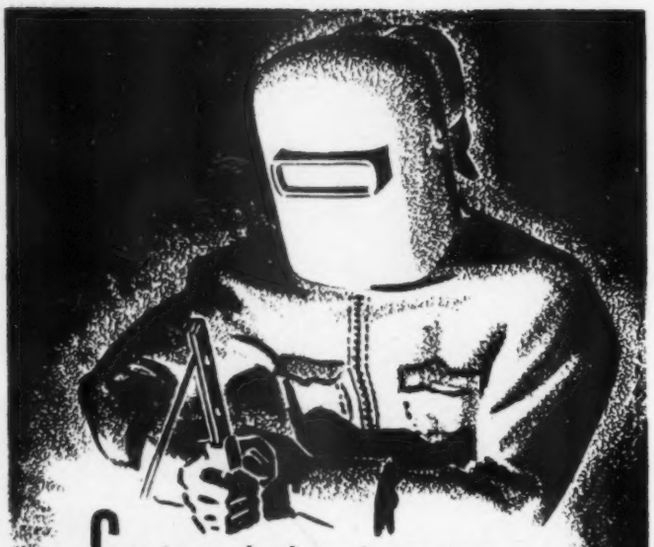

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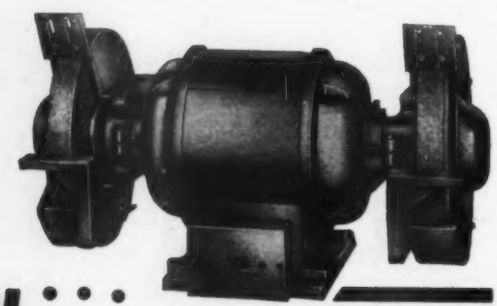

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(Continued from page 268)

the nation's defense would want to continue to specify synthetic rubber's use in national defense equipment in sufficient amounts to assure continuing operation of the large-scale plants. This, he pointed out, would "assure us of adequate production capacity for use in any emergency, and reasonable protection against high prices of natural rubber." He emphasized that only by continuing research and actual volume production could the cost of making synthetic rubber approach more nearly the production cost of natural rubber.

As for the near-term likelihood of general-purpose synthetic rubber's being able to compete with natural rubber in price, he said that estimates of the all-around economic potentialities of synthetic rubber are being favorably revised all the time in the light of technical advances. He indicated that progress has "run well ahead of expectations, both as to indicated capacities of given plants and in the adaptation of the material to necessary uses."

A clue to the progress being made, as reflected in price, he said, was seen in the fact that while his estimate three years ago before a Senate committee that synthetic rubber could be produced on a large scale in this country for as low as 25 cents a pound was received with general skepticism, the office of Rubber Director Jeffers recently has been reported as mentioning the likelihood of synthetic rubber at 16 cents a pound. But it will take a lower cost than this to eliminate natural rubber on economic grounds, Mr. Collyer declared.

Discussing the "really long-term prospect," he said the ability of "the kind of post-war world that all of us hope for" to absorb easily twice as much rubber as it ever did in the past is apparent when attention is called to the fact that the pre-war per capita consumption of rubber was but three one hundredths of a pound in China and three tenths of a pound in Russia, compared to 10 pounds per person in this country. "You can see what a closing of those gaps—even slightly—would mean," he said.

* * *

WHY ALKYD RESINS ARE LIMITED

ACCORDING to a recent estimate based on 1940-41 figures, 16% of glycerine production went into the manufacture of resins. This means that tremendous quantities of glycerine were employed in making alkyd resins and ester gums during that period. Although figures are not yet available, there is good reason to believe that the production of these resins, more especially the synthetic alkyd resins, was much higher in 1942 and will be even greater in 1943. This is because alkyd resins have gone to war as important constituents of protective coatings for all types of military equipment.

These alkyd resins, often referred to as glyceryl phthalate resins because they consist chiefly of the reaction products of glycerine and phthalic anhydride plus suitable modifying agents, are outstanding for the desirable properties they afford to paints, varnishes and lacquers. In lacquers, for example, alkyd resins impart increased resistance, improved adhesion and flexibility retention. During peace-time, these alkyd containing lacquers found extensive use in coatings for automobiles, refrigerators and similar products. Used in conjunction with other resins, such as urea-formaldehyde resins, alkyds serve to increase the durability, resistance and improve other desirable qualities of the finished paints and enamels. Suitably modified with oils and other sub-

(Continued on page 272)

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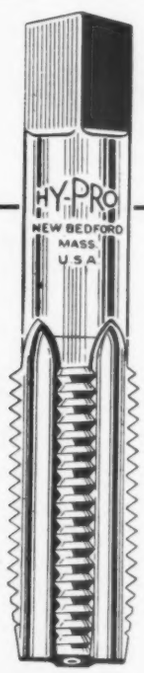

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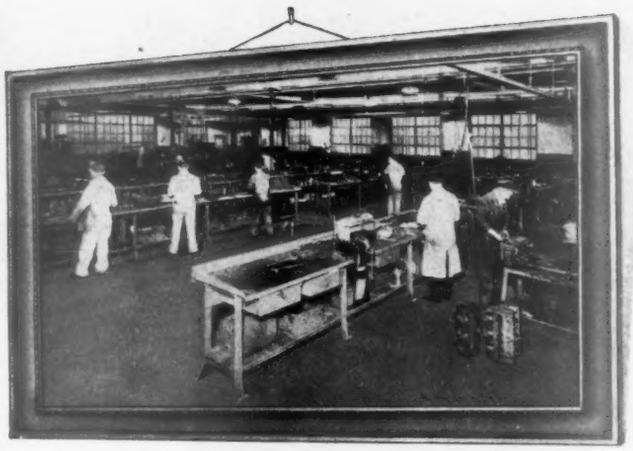

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(Continued from page 270)

stances, these glycerine-formulated resins can be "tailor made" to fill practically any requirement or specification.

It is understandable, therefore, why these resins enter so extensively into the manufacture of the paints and enamels used by the Army to protect much of its equipment. Glyceryl phthalate type resins, for example, are specified for making rust-inhibiting primer paints. To this may be added the tremendous demand for alkyd resins by both the Navy for new ships and the Maritime Commission for new freighters to carry supplies and Lend-Lease materials. Alkyd resins are also demanded by many government aircraft specifications. Thus one typical joint Army-Navy aeronautical specification which applies to cylinder finishes calls for a glossy black, heat-resisting glyceryl phthalate enamel. Similar specifications require the use of alkyd-containing enamels for finishing or protecting other aircraft engine parts.

Indirectly these glyceryl phthalate resins are serving the war needs in other ways. For example, these resins are widely used as binders for abrasives and in special electrical insulating materials.

Of course, such wide uses for essential war purposes must necessarily limit the quantities of alkyd resins for civilian use in protective coatings, textiles, paper, printing inks and the like. Nevertheless, study and developments in the field of alkyd resin application and formulation continue. One important development of this nature is the growing use of alkyd resin emulsion (or water) paints as substitutes for the oil-varnish types which require critical materials. Their rapid drying qualities, freedom from odor and other advantages make these alkyd emulsions especially suitable for interior wall paints and as exterior paints for cinder block, concrete, cement and similar surfaces.

The patent literature likewise points to new uses for these resins. According to one recent patent (U.S. Pat. 2,289,222) use is made of a castor oil-modified glycerine-phthalic anhydride resin for producing sheer knit goods that are substantially free from snags and pulled threads. In another patent (U.S. Pat. 2,289,266) a combination of a phenol-formaldehyde resin and a glycerine-phthalic anhydride resin is specified in the manufacture of casting resins which form cast products that are clear and colorless. Since alkyd resins have found but little application in the field of cast plastics, this development is of particular interest and value.

* * *

COLOR SYSTEM FOR SCRAP IDENTIFICATION

THE U. S. Navy has developed a color chart and tag system as a method of identifying various types of scrap metal. The color chart furnished to all activities producing ferrous and non-ferrous scrap outlines the system of identification used for in-stock metals. In the past all metals have been identified by this system from the warehouse to and through the shop. Under the salvage conservation program, the system is extended to the scrap material generated in the various shops and is used to segregate and classify accurately all grade and alloys of metals to and in the scrap yard. The continuation of this system insures the proper identification of the scrap generated by a machine.

A tag is placed on the machine indicating the metal alloy being processed. When the machine needs clean-

(Continued on page 275)

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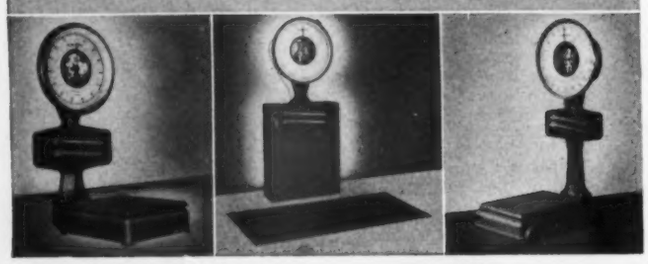

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(Continued from page 272)

ing or when a change is made in the type of metal being machined, a flag is placed on the machine for the immediate attention of the sweeper. Enough sweepers should be employed to insure the rapid cleaning of machines when indicated. The sweeper fills the tote box and then transfers the identification tag from the machine to the tote box. The tote box is taken to the row of containers (placed against the wall or some other location that will not interfere with shop operations) and dumped in the container marked by the identical color circle found on the tag. Containers should be sufficient in number to hold all scrap produced.

The greatest possibility of error lies in the transfer of scrap from the machines to these large containers. If the proper containers are not available or if the supervision is lax or sporadic, enough mistakes will be made to nullify the whole effort. The success of this program is dependent on proper supervision and responsibility. This will have to be worked out in ways best suited to the individual activities.

THE DIFFERENCE BETWEEN HOME SCRAP AND PURCHASED SCRAP

THERE have been many confusing reports emanating from various sources which have the effect of giving an erroneous picture of the amount of scrap being used by America's steel mills and the amounts which will probably be needed. There is one point which it now is extremely important to clarify in the minds of everyone so that they will not be lulled into a feeling of complacency under the impression that we have an adequate supply and may now relax our efforts in keeping the scrap flowing. This is the difference between *purchased* scrap and what is known as *home* scrap. Purchased scrap is what the steel mills have to buy outside. Home scrap is that which develops within the mill's own manufacturing operation.

PR UNDER CMP5 USED FOR MRO ITEMS FOR OFFICES

Preference ratings assigned under CMP Regulation No. 5 to a particular business may be used to obtain MRO items for general offices, branch offices, salesrooms, and other facilities essential to the conduct of the business, according to the War Production Board. This is made clear by Interpretation No. 5, of CMP Regulation No. 5.

LIBRARY ON WELDING

A new library on welding, believed the most extensive in existence, and one which will prove of particular value to the industrial field, has been established at the Ohio State University, according to E. N. Manchester, librarian. It is known as the A. F. Davis Welding Library, and is the gift of A. F. Davis, vice president and secretary, The Lincoln Electric Co., Cleveland.

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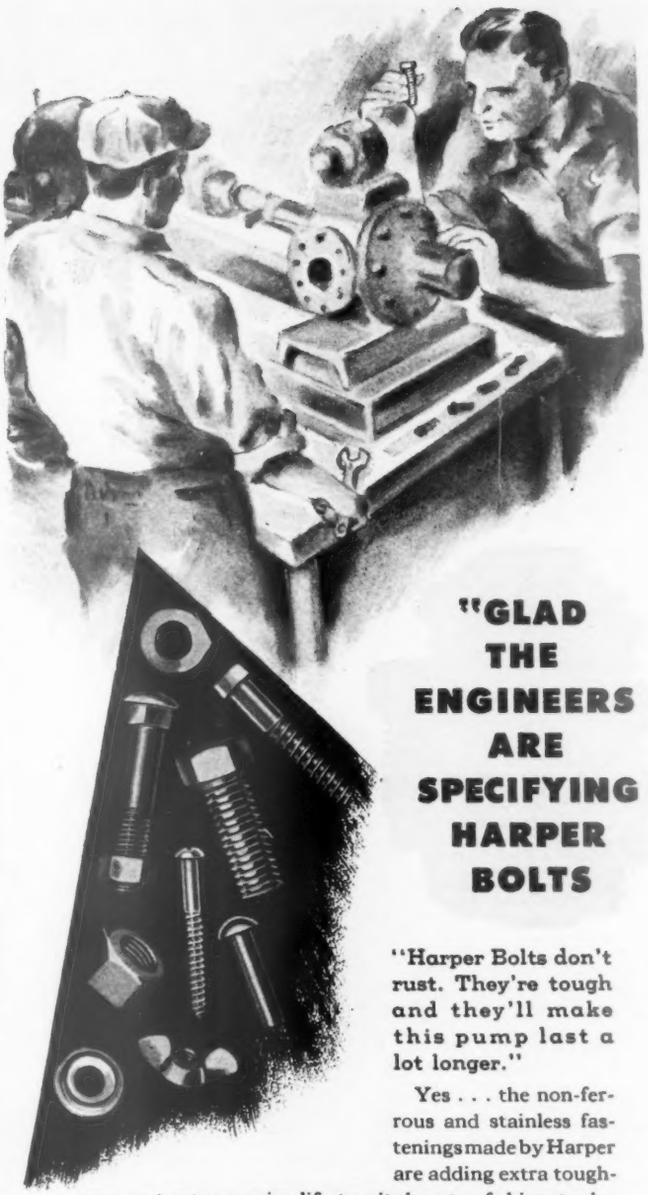
A worn-out, metal cutting band saw can provide usable blades for hand hack saws. A very durable blade, which still has a great deal of life left for hand sawing, is made by shearing the old band saw into strips and punching holes into the ends of the strips with a hand punch.



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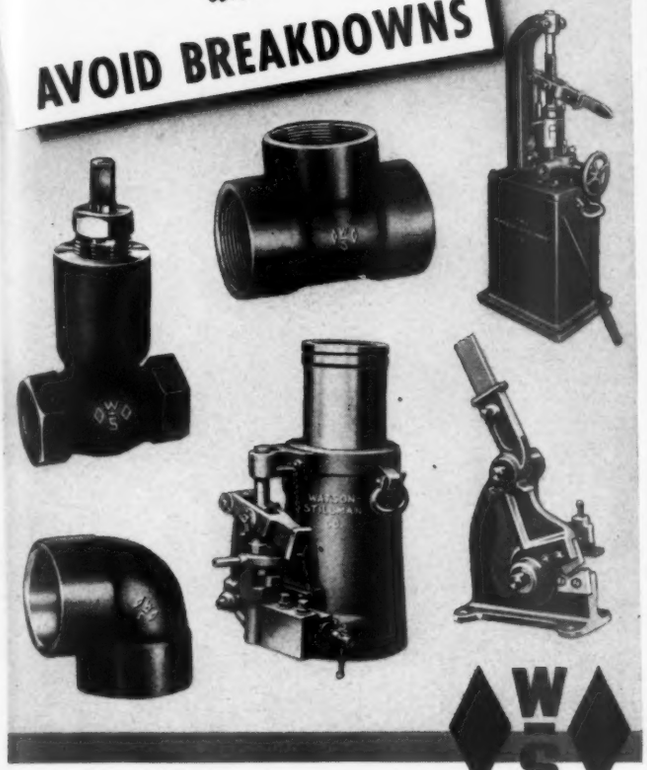

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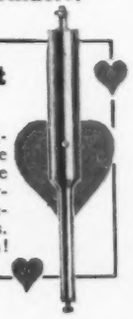

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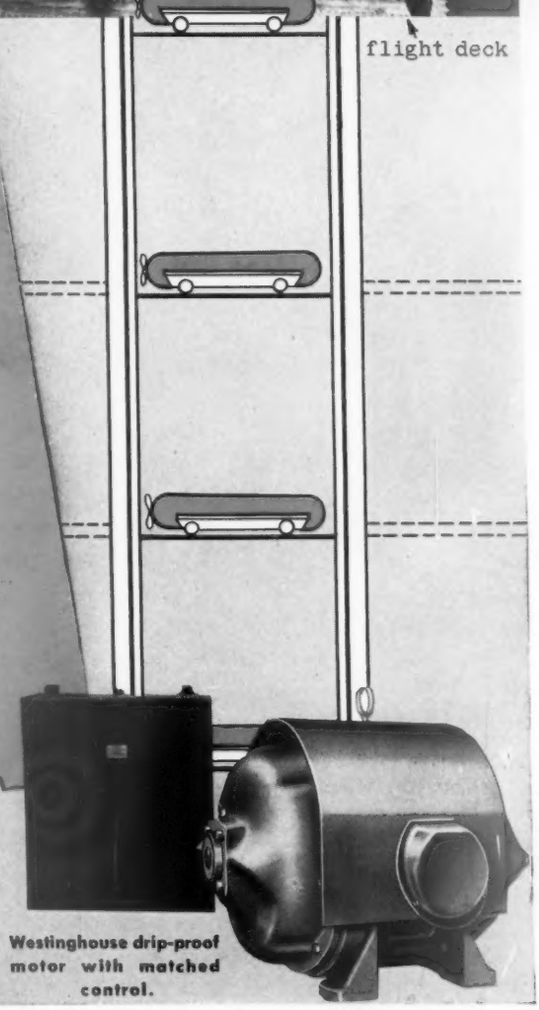

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